Physical & Applied Sci. Serials Engineering
TS 1300 C25 v.38 no.25 cop.2
ENGIN STORAGE

CANADIAN TEXTILE JOURNAL

VOL. XXXVIII Gardenvale, P.Q., December 6, 1921 No. 25

SANDOZ CHEMICAL WORKS

SANDOZ

BASLE SWITZERLAND

Offer from Montreal Stock the following Colors:

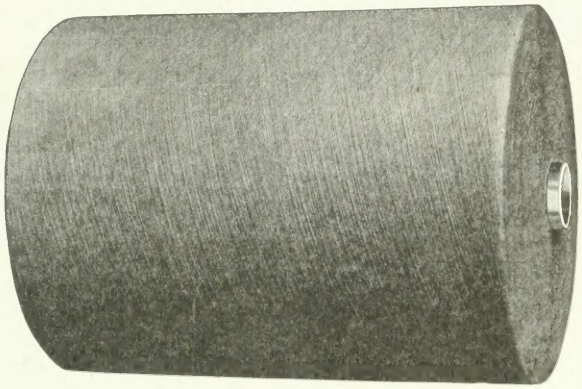
Wool Green S
Rhodamine B
Xylene Blue VS
Xylene Blue AS
Patent Blue A
Xylene Light Yellow 2G
Chinoline Yellow

Also complete line Acid, Direct, Chrome and Sulphur Colors.

McARTHUR, IRWIN, LIMITED

SOLE CANADIAN DISTRIBUTORS. MONTREAL

THE FOSTER TUBE WINDER



Tubes or cheeses produced on the Foster Tube Winder hold up to 3 pounds of yarn.

Used as supply for Jack Spooling, Warping, Twisting or Quilling, they save in re-creeling, waste and broken spools.

FOSTER MACHINE COMPANY

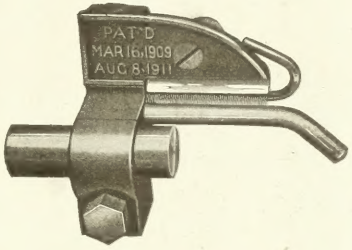
WESTFIELD, - - MASS.

GARLAND

LOOM PICKERS *and*

LOOM HARNESSES

GARLAND MFG. CO., SACO, ME.



Over 260,000

MacColl Patent Spooler Guides
or Slub Catchers

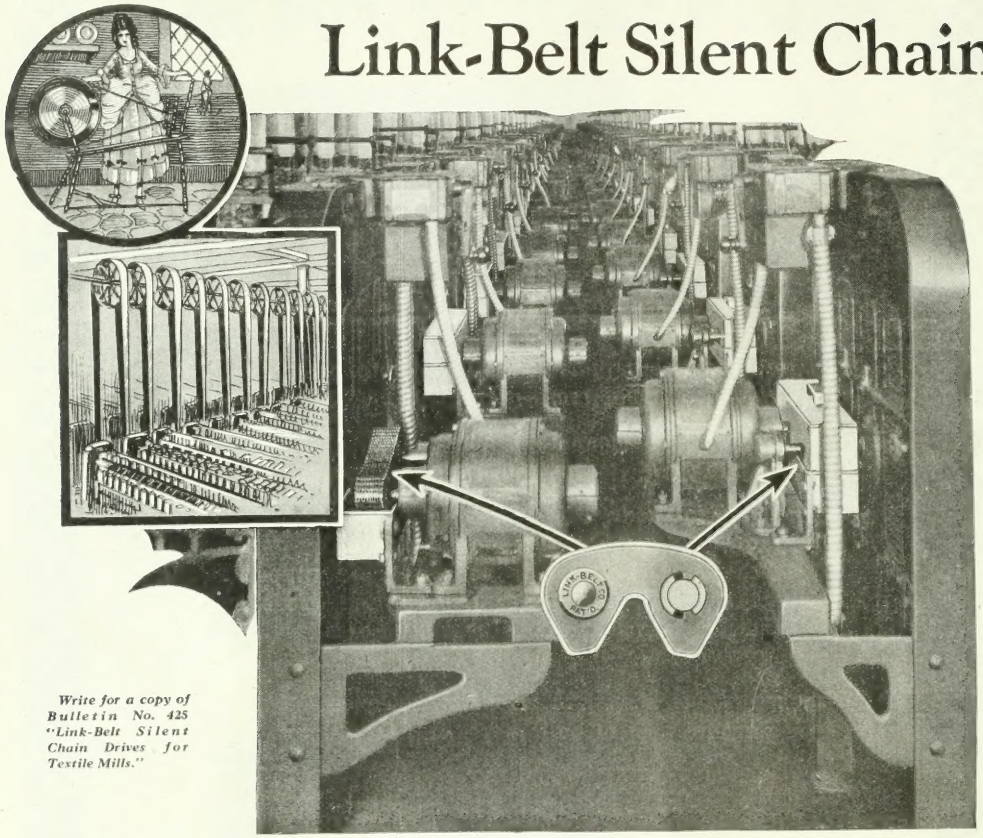
in use up to October 1st 1921

Adapted to both Cotton and Worsted Yarns

DRAPER CORPORATION

Atlanta Georgia Hopedale Massachusetts

From Hand Power to Link-Belt Silent Chain



Write for a copy of Bulletin No. 425 "Link-Belt Silent Chain Drives for Textile Mills."

IN THE days of the old spinning wheel, hand power turned the wheel that spun the yarn. Just as this primitive form of power gave way to steam power, applied by belting, so is the latter rapidly making way for the greater efficiency, economy and dependability of electric power transmitted through Link-Belt Silent Chain Drives.

The lessons of the past show that if a manufacturer is to be successful he cannot cling to wasteful, obsolete methods, while his competitors, wide-awake to the march of industrial progress, adopt new methods that mean a better product at a lower cost of manufacture.

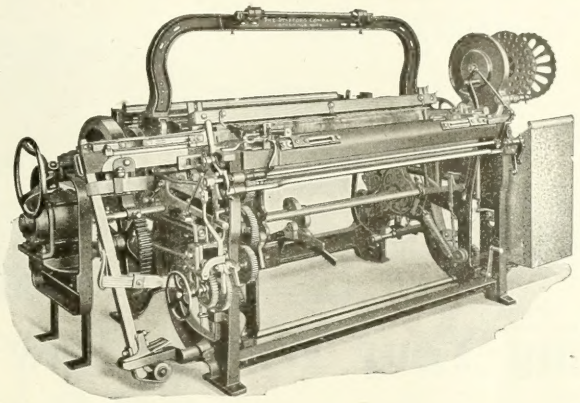
The use of Link-Belt Silent Chain Drives is not limited to spinning frames, but is suitable for a wide variety of textile mill drives.

824

CANADIAN LINK-BELT COMPANY, LTD.

TORONTO, Wellington & Peter Sts. MONTREAL, 10 St. Michaels Lane

LINK-BELT



ADAPTABILITY

ALL lxl fabrics may be woven on Stafford automatic looms. It makes little difference what the goods may be—plain or fancy, coarse or fine, all show substantial savings in weaving costs. Cop or bobbin filling can be used equaly well.

THE STAFFORD COMPANY
READVILLE, MASS.

CANADIAN REPRESENTATIVES
WHITEHEAD, EMMANS, Ltd. 285 Beaver Hall Hill, MONTREAL

AUTOMATIC
STAFFORD
LOOMS

DEGRACO PAINTS
ALL COLORS FOR ALL PURPOSES

Paying Your Way to Low Cost

Your painting costs will always be lower if you use good paint.

Good paint that has proven service records back of it, is unquestionably the best investment in the long run. It does the job you pay to have it do — protects surfaces to which it is applied — eliminates frequent re-paintings — cuts down repair and replacement costs.

Degraco Paints, through service records in the textile field are known as good paints. Year after year they insure protection at lowest ultimate cost. You eliminate the hazard of experiment when you use ***Degraco Paints.***

Degraco Paints are made in all colors for all purposes:

Sta-White — the pure white oil paint for walls and ceilings.

Degraco Colors for employees' houses.

Superior Graphite Paint for the protection of structural steel and metal.

Degraco-Tone — the flat wall paint.

Degraco Brick and Concrete Paints.

Enamels, Dampproof Coatings, Gas Holder Paints and a score of others.

Dominion Paint Works, Limited

Makers of

Degraco Paints, Varnishes, Enamels

WALKERVILLE, - - CANADA

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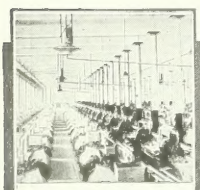
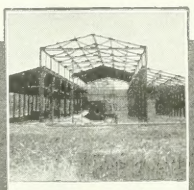
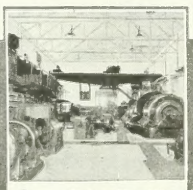
(87)



Sta-White— *a pure white, light-reflecting oil paint for industrial interiors. It stays white. The mill white you can rely upon.*

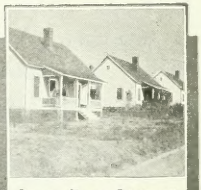


Superior Graphite Paint—*a protective coating for structural steel, bridges, metal roofs, stacks and all metal surfaces.*



Degraco Paints, Varnishes and Enamels *are made in all colours for interiors and exteriors, for every service requirement.*

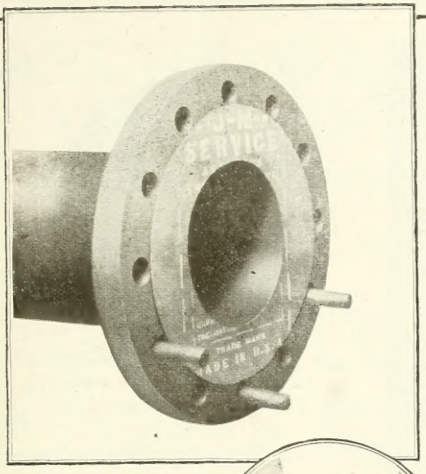
Degraco Brick and Concrete Paints—*for interiors and exteriors. Concretell Walls, Floor Paint, Floor Hardener, Damp-proofing.*



Degraco House Paints—*all colours for exterior and interior surfaces. High quality and durability assure low ultimate cost.*

DEGRACO

Paints - Varnishes - Enamels



A Ring Gasket cut from Johns-Manville Service Sheet Packing makes a long-lasting tight joint.

Better joints— with smaller gaskets

THE way you cut a gasket often determines the reason for blowouts or tight joints, packing waste or packing economy. You know there are two distinct types of gasket that may be cut from the same sheet for packing pipe and other flanges—these are the full cut type and the ring type both shown in the illustration.

We advocate and recommend the use of the ring type gasket because it makes a tighter, better, more economical joint than the full cut gasket.

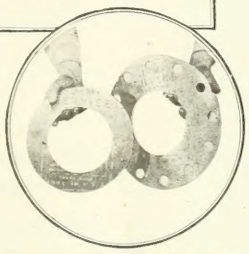
Here's why:

1st—The ring gasket allows a greater and more uniform pressure to be brought against the gasket—more pounds per square inch of packing area than is possible with a full gasket.

2nd—Irregularities on the flange or burrs on the outside edges are less likely to prevent a perfect fit with the ring gasket than with the full gasket which reaches to the very outside edge of the flange.

3rd—The ring gasket is more easily made and applied because there are no holes to match up with the bolts or studs which have to pass through a full gasket.

4th—Much less material is required for making ring gaskets.

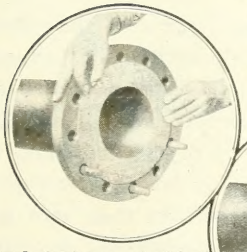


Note the difference in size between the Full Gasket and the Ring Gasket. With the same pull on the bolts there would be nearly twice as much pressure per square inch on the Ring Gasket as there would be on a Full Gasket.

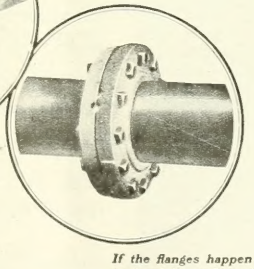
If you have been guided largely by habit in the use of full gaskets, we suggest that you try ring gaskets and cut them from Johns-Manville Service Sheet No. 60.

CANADIAN JOHNS-MANVILLE CO. LIMITED

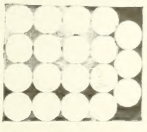
Toronto Montreal Winnipeg Vancouver
Windsor Hamilton Ottawa



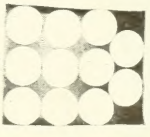
A Ring Gasket is easy and quick to cut and apply. There are no bolt holes to fuss with. Cut your Ring Gaskets from Johns-Manville Service Sheet Packing.



If the flanges happen to be irregular or burred, a Ring Gasket is the solution because it doesn't reach out to the damaged edges of the flanges.



You can cut about 50% more Ring Gaskets than Full Gaskets from the same sheet of packing. And the Ring Gaskets will do a better job—particularly if they're cut from Johns-Manville Service Sheet Packing.



JOHNS-MANVILLE SERVICE — COVERS THE CONTINENT

Through—

Asbestos

and its allied products

JOHNS-MANVILLE
Serves in Conservation

Heat Insulations, High Temperature Cements, Asbestos Roofings, Packings, Brake Linings, Fire Prevention Products

JOHNS-MANVILLE

POWER PLANT MATERIALS

"The ultimate choice of the prudent housewife"

"THE PRINT DRESS"

SOME people believe that the "print dress" belongs only to the age of innocence and simplicity. But it doesn't.

¶ True, print is still the material from which charming, inexpensive and ever-fresh dresses may be made for children. But older members of the household are continually finding new ways of using print for their own personal wardrobes—for decorative effect in house dress, garden costume or other apparel.

¶ In "Prue Cottons" prints your patrons will find inspiration for something new, quaint and inexpensive.

DOMINION TEXTILE
COMPANY, LIMITED

MONTREAL TORONTO WINNIPEG

44.

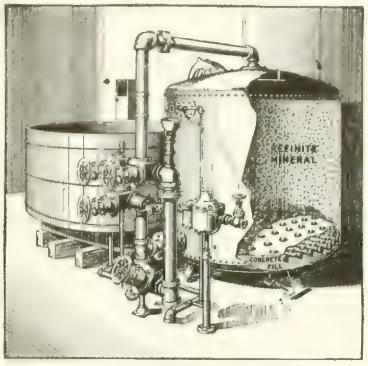
ARE YOU WASTING YOUR PROFITS?

A prominent textile mill installed a Refinite Water Softening System.

Note these Results!

"50% saved on soap and soda."
"Brighter and faster colors in dyeing."
"Dyed Wool Softer and in better condition."
"Production increased in weaving due to evener and stronger yarn."
"Imperfections decreased to a minimum."
"Our finished cloth is now clean, allowing us to reach markets we could not before touch."

(Name given on application.)



THE REFINITE WATER SOFTENER
Industrial Style
NOW MADE IN CANADA

Progressive textile officials **KNOW** that it pays to soften your water supply by using Refinite. Their testimony will guide you.

Refinite Perfect Soft Water will remove and eliminate boiler scale and attendant troubles.

The Refinite Water Softener is the only system using "**REFINITE**", a natural water softening mineral. — Easily and quickly installed — No expert supervision required. Our representatives will be glad to demonstrate, without obligation, what Refinite will do for your particular need.

Write **NOW** for our Bulletin 31 and booklet "Why Textile Mills Should Use Soft Water".

We also manufacture Refinite Rapid Pressure Filters and Booth Lime-Soda Water Softeners.

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RIVAL OF THE CLOUDS
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NATURE'S WATER SOFTENER

***The* REFINITE COMPANY *of* CANADA, Ltd.**

HEAD OFFICES: 319 Continental Life Building, TORONTO, CANADA

NEW YORK CHICAGO OMAHA SAN FRANCISCO BIRMINGHAM

The Seam That Sells the Garment
actual size

Manufacturing Economy and Flatlock Machines.

To manufacturers of knit underwear we submit these Flatlock economy facts

Flatlock machines save labor and space. Two Flatlock machines occupy less floor space yet do the work of three of the old style seaming machines. This eliminates one operator out of every three.

Flatlock machines are easy and quick to operate. Flatlock machines have a unique feature in that the goods works *off* the arm—not onto it as in the old style machines. This makes it unnecessary to stop the machine and pull the goods off the arm when the seam is finished.

A trial demonstration of the Flatlock machine in your own mill will convince you of the remarkable economy to be had from its use. We should be glad to hear from any manufacturer who cares to avail himself of his offer. Write us today for detailed information.

Willcox & Gibbs Sewing Machine Co.

Home Office: 658 Broadway, New York
Corner Bond Street
Willcox & Gibbs, S. M. Co., Ltd.,
London, Paris, Brussels, Milan

Canadian Representative: W. J. Westaway Co. Ltd., Main and McNabb Streets, Hamilton, McGill Building, Montreal

LEIGH & BUTLER 232 Summer Street, BOSTON, MASS., U.S.A.

TEXTILE MACHINERY

Sole Agents in the U. S. and Canada for

PLATT BROS. & CO., LTD.

OF OLDHAM, ENGLAND

By Far the largest Makers in the World of

COTTON, WOOLEN & WORSTED MACHINERY

AND A COMPLETE LINE OF

ASBESTOS MACHINERY

Also Sole Agents in U. S. and Canada for

Mather & Platt, Ltd

Equipment of complete works for

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Patent Mechanical FILTERS for Town Supplies and all industrial Purposes

Wool Washing and Drying Machines. Napping Machines. Sykes' Card Clothing for Cotton. Critchley's Card Clothing for Woolen and Worsted. Wilson Bros., Bobbins, etc. Harding's Pins, Fallers and Circles. Dronsfield's Grinding Machinery and Emery Fillet. Double Loops Bands, Scroll Banding, etc. Condenser and Gill Box Aprons.

Diamond Fibre

the Universal Raw Material

It's STRENGTH

Diamond Fibre because of its great strength and wearing qualities is especially suitable as a material for making Receptacles.

It does not dent, crack, split, splinter or corrode. Being slightly resilient it provides increased resistance against hard usage, yet, notwithstanding its extreme strength, it is lighter than aluminum.

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Bobbin Boxes
Bobbin Heads
Noiseless Waterproof Gears
Shuttles
Barrels
Mill Baskets
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Waste Baskets
Doffing Cars

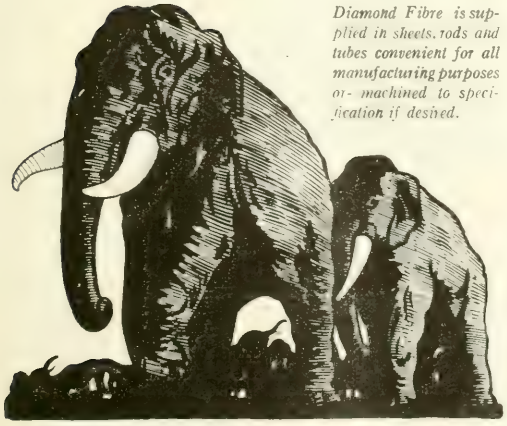
DIAMOND FIBRE RECEPTACLES

are impervious to oil and grease. They are sanitary, fire-resisting and easily cleaned. Their interior surface is smooth and flawless, thus protecting contents from tearing.

Write for further particulars about Diamond Fibre Receptacles or come and see them at our showrooms. They can find a place in your manufacturing process and save you money.

Diamond State Fibre Company of Canada, Ltd.

Head Office and Works:
235 Carlaw Ave., - TORONTO, Canada



Diamond Fibre is supplied in sheets, rods and tubes convenient for all manufacturing purposes or machined to specification if desired.

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AMONG THE SPECIALTIES WHICH WE MANUFACTURE ARE

MONOPOLE OIL
Reg. Trade Mark No. 70991

TEXTILE GUM
For fabric printing

BOIL-OFF OIL
Replacing soap in degumming silk

BLEACHING OIL

BENSAPOL
For scouring wool.

ALIZARINE YELLOWS

MORDANTS and CHROME COLORS
For fabric printing.

GUMS
Arabic, Tragacanth, Karaya.

HYDROSULPHITE
For stripping and discharge printing.

INDIGOLITE
For indigo discharge.

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PASSAIC, N. J.

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CIBA COMPANY, INC.
227-233 West Huron Street
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Pulled Wools

DOMESTIC and FOREIGN

Pickled Sheep and Lamb Skins

THE HARRIS ABATTOIR CO., LTD.

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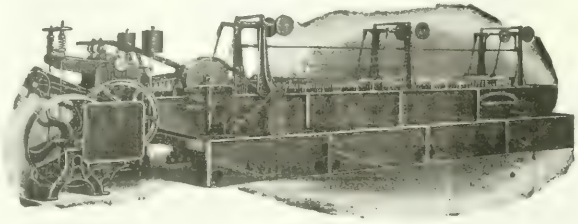
TORONTO - - ONTARIO

The Sargent Wool Washing Machine

For Brighter Scoured Wool. For Saving Soap.
For Ease in Operation and Dependable Service



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Automatic Wool and Cotton Dryers, Wool Dusters, Openers
Burr Pickers, Carbonizing Plants, Automatic Feeder
Yarn Conditioning Machines, Back Washers and Dryers

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For Wool

Under the name of
NEWPORT-FAST-ACID-BLACK N 2 B
we are placing on the market a product identical with
PRE-WAR NEROL 2 B
distinguished by excellent fastness to Washing, Acids and Alkalies and particularly adapted for dyeing, knitting yarns and slubbing.

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Branch Sales Offices:
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We use ***White Rose Lard Oil*** because, it

Saves Labor,
Makes Goods
Clean, Soft,
Pliable.

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LONDON, - - - Canada

Pressers of Good Lard Oil for over 40 Years.

Brinton Ribbers
Brinton Tie Machines
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Brinton Jersey Machines

All of excellent, Design—Material and Construction
They are mill favorites and most generally always adopted when once tried out.

Canadian Agents:

HARLEY-KAY, LIMITED
KNITTING MACHINE BUILDERS
GEORGETOWN, ONTARIO

from your cutting room foreman, but first install

Eastman Gold Medal Cutters

and give him a fair chance to reduce cutting costs to where you must have them to-day.

"It's Best to Buy the Best First.

Eastman Machine Co.

of Buffalo, N.Y., U.S.A.

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EVERY BARREL

of EVERY GRADE of

Breton Oils for Wool

is manufactured at our own works from the finest materials with careful laboratory tests, and is guaranteed to do the work for which it was made. That's why the same mills use them year after year.

BORNE, SCRYMSER CO.

Established 1874

80 South Street, NEW YORK
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Works: Elizabethport, N.J.

Canadian Built Knitting Machinery for Canadian Mills

Circular Latch Needle Knitting Machines of standard design—size—gauge and construction.

Sinker Top Jersey Machines up to 10 in. diameter, for plain or striped work.

Ribbers—single—two—three or four feed, plain or automatic, and with yarn changers if desired.

Special Knitting Machines for many purposes.

Automatic Rib Hosiery Knitters.

Cop and Skein Winders from 6 to 48 spindles.

Yarn Waxing attachments.

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Mr. J. P. STUBBS, Manawatu Hosiery Mfg. Co.' Palmerston North, N.Z.

ALL KINDS OF

Mill Bobbins,

Spools, Skewers,

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Industrial Specialty Manufacturing Co.,

LIMITED

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Patented in the U. S., Canada and other lands.

Once Receptive, you will be more than twice Responsive.

For winding Silk, Artificial Silk and Cotton from the skein and also back wind wool from the cops, and guaranteed to give satisfaction for all knit fabrics.

Winding, spooling, warping and beaming [illegible]

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JACOB K. ALTEMUS,

2824 N. 4th St., Philadelphia, Pa.

New Fast Cotton Dyes

The latest improvement in Fast Red, Pink and Orange dyes for cotton:

NAPHTOL A.S.
NAPHTOL B.S.
NAPHTOL FAST RED GL
(For Printing)

together with the necessary bases for developing on the fibre.

These dyes are fast to light, chlorine and alkalies and replace Vat Dyeing Reds, Scarlets and Pinks, also Alizarine and Paranitraniline, Primuline and Rosanthrenes.

Owing to their extreme fastness, these products are admirably adapted for shirtings.

Samples and full particulars will be gladly furnished to interested parties

A. Klipstein & Company
644-652 GREENWICH Street NEW YORK City

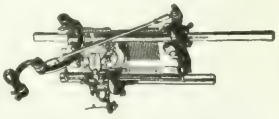
Dubied Flat Knitting Machines

Dubied Links & Links Machines

Hand and full Automatic Power

Acknowledged by users, experts and judges as

"THE BEST"



For Immediate and Future Delivery
Machines can be seen in operation,
Complete Stock of Needles and Supplies

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Unvarying Quality

Every ounce of Windsor Brand Chemicals is of the same high quality.

CAUSTIC SODA
BLEACHING POWDER
or
CHLORIDE OF LIME

For years the Windsor standard of purity and excellence has been consistently maintained by skilled chemists in Canada's finest chemical plant.

Your orders carefully and promptly attended to.

The Canadian Salt Co., Limited
WINDSOR, - ONTARIO

KLAUDER-WELDON

Dyeing-Bleaching-Scourin Machinery

There are K-W machines in use which were built nearly half a century ago and which are still doing their work efficiently and economically under most severe conditions.

K-W Machinery by its accomplishments, has steadily and irresistibly built up a reputation that has made the name "Klauder-Weldon" synonymous with the **"world's best dyeing, bleaching and finishing machinery."**

Our interest in upholding this reputation means that you MUST be satisfied, and our suggestions to prospective purchasers are made with the view toward solving any dyeing, bleaching or scouring problem for all time. We will be glad to answer any and all questions on your part whatsoever.

The Klauder-Weldon Dyeing Machine Co.

Bethayres, Pa., - - U.S.A.

Canadian Representative:
W. J. WESTAWAY CO.

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McCONNEL & CO., Ltd.

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FINE COTTON. DRY SPUN.
BOTANY and PERCENTAGE YARNS For HOSIERY
UNDERWEAR and ELECTRIC TRADES

T. D. WARDLAW & SON

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JOSEPH CLAY & CO.

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EXPORTERS OF ALL CLASSES OF YARNS

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Hosiery and Coating Trades, on Cheeses, Cones, Cops, Tubes or in Hanks

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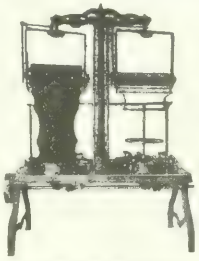

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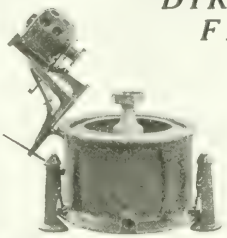

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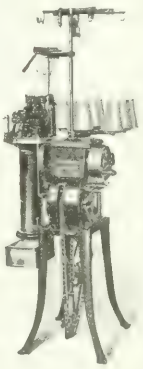

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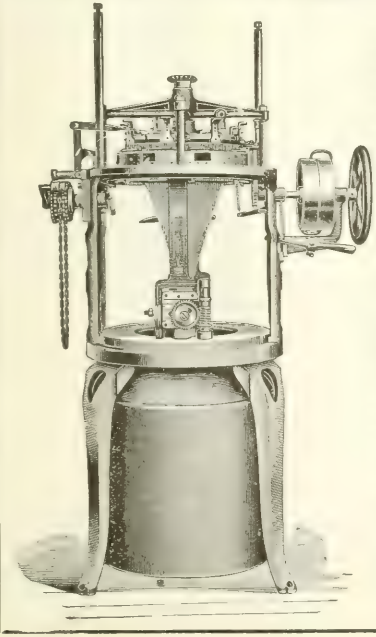

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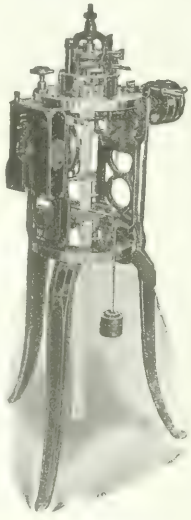

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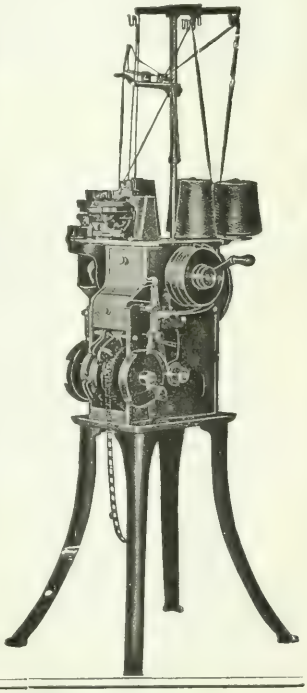

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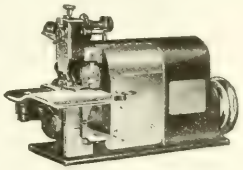

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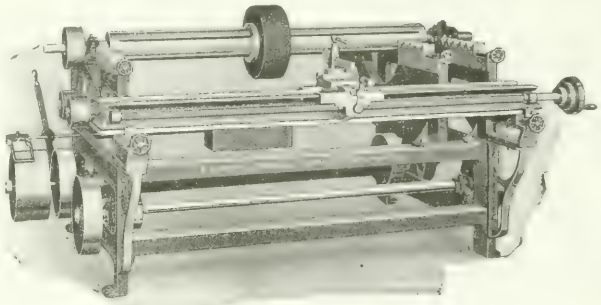

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CANADIAN TEXTILE JOURNAL

An Educational Periodical, published Fortnightly, for the dissemination of Technical Information, with a Commentary and Review of the News and Conditions of the Textile Industry in Canada

VOL. XXXVIII. GARDENVALE, P.Q., DECEMBER 6, 1921 NO. 25

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Eastern Manager, A. S. Christie, Gardenvale, Que.

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EDITORIAL

A YEAR OF CONVALESCENCE.

Just as the year is drawing to a close the textile industry in Canada is enjoying a period of activity that is in distinct contrast to the general dulness that has characterized the trade during the last twelvemonths. Bradstreet reports that there is a great scarcity in many lines of cotton goods, that the mills are not able to turn out the goods fast enough to supply the demand, that there is a very good demand for colored cottons and that trade in blankets and yarns is brisk. Many wholesale houses have been obliged to put orders for Spring delivery on one side in order to cope with immediate orders for Christmas business. During the summer months stocks were practically exhausted, and now nearly all Canadian cotton mills are back on the normal schedule. Several firms report operation on a twenty-four hour basis, and a few are refusing further orders except for Spring delivery.

The past year has been one of marked industrial depression—a depression that has been world-wide. In some measure, but not to the same degree as many other Canadian industries, that depression was reflected in the Canadian textile industry. The year opened inauspiciously. There had been a decided slackening of demand and drop in values during the last quarter of 1920. Business was exceedingly dull; cancellations were coming in, in ever-increasing quantities, but with it all there remained in the textile industry an optimism that the slump had spent its force and that from then on a process of slow recovery would set in. When one reviews the situation now in comparison with the situation in other branches of industry, and in particular, when compared with the condition of the textile industry in other countries, that optimism would seem to have been justified.

At the beginning of the year, out of 1,100,000 cotton spindles in Canada, only 681,012 were at work. Production had been cut fifty per cent. from normal. At the end of the first six months the returns showed 968,110 spindles at work, of which 184,358 were on short time. These returns, worked out over the whole of the reporting spindles indicated a suspension of the industry during the half year of only 1.56 weeks. Outside of India, no other important textile manufacturing country had made nearly as good a showing in the cotton industry. Britain, for instance, showed a suspension of 12.92 weeks; France, a suspension of almost 7 weeks; Italy, 3.11 weeks; Czecho-Slovakia, 8.76 weeks; Spain, 9.17 weeks; Belgium, 12.94 weeks; Switzerland, 12.39 weeks; Poland, 5.8 weeks; and so on through other countries of lesser note.

The recovery, though slow, and slower than anticipated, was more rapid in Canada than it was in almost any other country, but even so, the trade may be said to have been in a state of convalescence during the whole year, as it was only towards the end of the year that it began to feel itself approaching anything like its old strength. While most of the cotton companies had to take big losses, slash inventories and proceed in a cautious and conservative manner all through the year, the annual financial statements of the different companies were comparatively satisfactory, and showed that they had emerged or were emerging from the period of readjustment in a manner that reflected a wise caution on the part of the management of the various concerns. All year the cotton companies have been working on a smaller margin of profit in an endeavor to stimulate business. In this commendable effort they were baulked to some extent by retailers and dealers who refused to take their share of the inevitable loss, and this action on the part of many retailers helped materially to retard the return to normal trading.

It was the woollen branch of the manufacture of textiles that was more heavily hit by the slump that began in 1920, and which has continued practically up till now. Most of the woollen mills were closed down for varying periods at one time or other during the year. Virtual stagnation prevailed in this branch of the industry. Now and then there was a demand for certain classes of goods that would keep a mill or two busy for a period, but beyond these seasonal periodic activities, the woollen trade felt the depression as much if not more than any other industry. The best that could be said about woollen textiles was in the form of prognostications which always saw brighter times just a short bit ahead. By the end of the first quarter manufacturers were operating on a little more active schedule. Domestic conditions seemed to be slowly picking up. But these signs only led to falsification of hopes. The end of the second quarter saw no improvement. Business was spasmodic and afforded no assurance of permanence. Hosiery factories were busier by that time, but the woollen manufacturer was having a harder time than ever. Certainly his difficulties throughout the year were neither few nor small.

September, 1920, was the month when the slump

began, and it was that month in 1921 which brought the first rift in the clouds that had hung over the woollen manufacturers for a year.. By then business was improving in nearly all lines, but it is still a matter of speculation whether that improvement, now become general, will hold into 1922. The feeling is that while the industry may be working less than capacity for some time yet, it is not thought probable that trade will be as depressed during the coming year as it has been this year.

A feature of the industry this year has been the formation of a company to comb wool in Canada. Hitherto there has been no wool-combing plant in Canada to supply the needs of the trade, and consequently Canada has been constrained to export most of her wool which is of the combing variety, and then the manufacturers have had to buy it back in the form of tops. It is estimated that over 6,000,000 lbs. of tops were imported into Canada last year, and the hope of this new concern which is equipping a plant at Toronto, is that their enterprise will so develop that they will be able in the future to comb most of the wool needed by the manufacturing industry in Canada.

IMPORTED TEXTILES NOT SUPERIOR.

A few encomiums have been passed around recently relative to the quality of Canadian manufactured textiles which should obliterate the last vestige of doubt that might remain that the imported article is superior to the home-made product. During the heat of the election campaign, it appears, a charge had been made that cloth manufactured in Canada was frequently sold as having been imported. To ascertain the truth or non-truth of this statement the Toronto Globe interviewed a number of representatives of wholesale drygoods firms, all of whom were indignant that such a charge should have been made. "We boast of our stuff as Canadian-made" was how Mr. George Adams, manager of the ladies' clothing department of Messrs. Nisbet & Auld, answered the charge. "There are lines which we take a delight in comparing with American, and even British samples," he continued. "In 'novelties' there are a number of lines which we boast of as Canadian, which, in intrinsic value, are superior to similar lines of imported material. Moreover, the Canadian mills have the happy faculty of catching the Canadian fancy."

Mr. Dan Ross, manager of the men's woollen department of the same firm, remarked that Canadian tweeds and worsteds did not require to be sold under any other recommendation than that they were Canadian. Particularly was this the case when it involved a comparison with American goods.

Canadian consumers should take note of the declarations made by such authorities and embue themselves with the feeling that when they purchase Canadian manufactured textiles they are getting something that is not inferior, but is frequently superior, to the imported article.

THE RAW COTTON SITUATION.

Mr. W. B. Thompson, one of the big cotton factors in New Orleans, has made public in a letter his views on the raw cotton situation. In view of the facts, Mr. Thompson says, it is inconceiveable that the price of future contracts should have declined more than $30 per bale since October 3, and he is astounded that the market should have been stampeded on November 9 by the publication of ginning figures which indicated a total production of only 7,250,000 to 7,500,000 bales.

These slumps in the future contract market were neither logical nor reasonable, says the letter, as the immutable law of supply and demand pointed unmistakably to an exhaustion in the supply of spinnable cotton by the end of the season, and there is not the slightest chance whatever for a bumper crop next year. It is probable that the next crop will be little, if any, larger than the present and it is possible that it will be smaller unless there is an early material advance in prices. "Therefore," says Mr. Thompson, "from the viewpoint of essential facts, the recent disgraceful collapse in the future contract market registers **no decline in the intrinsic value** of cotton but reveals a panicky state of mind among traders produced by the efforts of certain men whose sordid desire is to collect blood money from the producers of cotton and at the expense of the prosperity of the United States, aided by a certain class of selfish interests who would in an effort to protect themselves from a paper loss endanger the prosperity of millions of people, and by a certain other class of spineless owners who would at the first cry of fire on shipboard cast their most precious belongings into the sea."

Dealing with the cause of these breaks in value, the blame is placed on certain Western and Wall Street bear raiders and on timid spot holders, who, frightened by the slump in chalk mark prices, sacrificed their property and played into the hands of the bears by selling for both spot and future delivery at whatever prices they could obtain. It is declared that the market must inevitably react to much higher prices unless the cotton South "commits economic hari-kari" by meeting the artificial prices fixed on the future contract boards. The danger to the cotton growers now lies not in further speculative selling but in the contingency that "feeble-minded owners of cotton" may play into the hands of speculative shorts by selling in competition with them and thus giving them an opportunity not only to still further depress prices but to get out of the market with their gains.

As a remedy, the withdrawal of cotton from "the pen of slaughter" is advocated. Every consideration of individual, sectional and national welfare demand that producers, merchants and bankers shall stop the senseless sacrifice of our great commodity, says the letter, which concludes thus:—

"There is no sane reason why producers, bankers and merchants of the south should not unite in a determined movement to withdraw all cotton from sale either for present or future delivery until shorts are forced to cover and spinners will pay a reasonable price; and as a corollary to this movement unite in inflexible determination to enforce a sane agricultural policy for next year by the planting of not more than one-third of the farm's acreage in cotton and the balance in sustaining crops."

KEENER COMPETITION AHEAD.

In the period immediately ahead, manufacturers will face the severest competition in a generation. Manufacturers in all countries will be faced with this situation, and while there is no method by which this competition can be avoided, there are methods by which it can be successfully met, says Commerce Monthly, which proceeds with the following exhortation:

"Overhead charges should be rigidly examined and cut to the lowest point consistent with productive efficiency. Costs should be critically studied and such examination should include not only factory operations, but the entire producing organization. In periods of high profits useless frills are certain to be introduced into the best systems. Simplicity is now of necessity the watchword and much careful but courageous elimination is necessary."

Cotton Mill Development in China.

The expansion of China's cotton spinning industry, Messrs. H. H. Fox, commercial counsellor, and H. J. Brett, commercial secretary to the British Legation in Peking, say, in a report issued by the Department of Overseas Trade, is quite remarkable. Twenty years ago there were only two mills in China, with 65,000 spindles. In 1902 the number had increased to 17 mills, with 565,000 spindles; in 1916 there were 42 mills, with 1,154,000 spindles; and the latest returns for 1920 give a total of 63 mills and 1,422,832 spindles. Some twenty mills are said to be under construction or projected. The Japanese have invested a good deal of capital in the industry, and they are credited with having in operation at the present time 18 mills, with 469,000 spindles.

Supplementary Letters Patent have been issued increasing the capital stock of Dominion Hair Felt Co., Limited, from $25,000 to $100,000.

EDITORIAL NOTES.

Improved Flax Scutcher.

A demonstration of an improved flax scutching machine was given by representatives of Vickers, Limited, of London, England, at Petrie's machine shops, Toronto, last week. A number of flax specialists, including representatives of the Department of Agriculture at Ottawa, have inspected the machine in operation and have passed an opinion of the flax fibre produced. There are approximately 70 flax mills in Ontario. The Vickers representatives are planning on making demonstrations in scutching before American flaxmen and if the market situation warrants, they are prepared to manufacture machines in Canada.

Bankers Criticize Cotton Growers.

Cotton growers of the south were severely criticized for permitting the present system of marketing their crops by L. K. Salesbury, Memphis, banker and planter, in his address before the north Mississippi group of the Mississippi bankers association at Memphis. He attacked the middlemen, who, he said, sit idly by while the crop is being produced and who gather the profits thereof during the ninety-day selling period. Mr. Salesbury urged an all year round selling period for cotton and suggested that the growers get together in some sort of co-operative plan, which would provide for the gradual marketing of the crop, as the demands of the market justified. While advocating diversification, he reminded the bankers that the south was also the only section of the country where cotton could be produced in large quantities. George R. James, Memphis banker, criticized both southern bankers and business men for extending too much credit and urged them to do more to bring about diversification, thus making their clients self-supporting regardless of the course of the cotton crop prices.

Cotton and Cotton Goods.

Cotton ginned to November 1st, as given in the U. S. Government report of November 9th, amounted to 6,646,136 bales, or 109,136 bales in excess of the estimate of the current crop for the season issued by the Government. This report surprised the trade, and cotton dropped about a cent a pound in speculative markets. It gives further proof of the manufacturers' belief that the crop will approximate 7,000,000 bales, and may run higher, says the monthly letter of the First National Bank of Boston. Continental stocks of cotton were then about 650,000 bales, as compared with 304,000 bales in 1920 and 244,000 in 1919. Stocks in England were about the same as a year ago, but on the date of the ginning report it was cabled that Lancashire spinners were talking of going on short time again because of dull trade in cotton goods. Exports of cotton to date have been about 700,000 bales in excess of a year ago. The movement of cotton goods on old orders is still

very full, while new business has been slow. There has been some easing of prices of gray cloths and sheetings, and no material improvement in duck.

U.S. Congress and the Manufacturers.

Conditions in the U. S. wool market have changed radically of late. The particular phase now prominent dates from the signing by President Harding of the bill extending the life of the emergency tariff indefinitely. Though repeatedly and accurately forcast in the news from Washington, this action came as a shock when finally accomplished. It has served as a notice to the manufacturers of the country that they have no place in the plans of Congress. Manufacturers recently in Washington, attending the hearing before the Senate Finance Committee, have returned home with the idea that the so-called "agricultural bloc" is determined to secure high duties on certain staple products and that manufacturers must wait until later.

Labor Costs.

In many lines, labor costs must be further reduced, says Commerce Monthly. Such reduction can in part be attained by lower wages, and in part by increased efficiency in organization for production. A considerable part of labor inefficiency is at times due to actual defects in plant organization. Business has two duties, first, to provide the best means for efficient production by its labor, and second, to insist on a day's work for a day's pay. Sales methods and policies must undergo searching scrutiny. Salesmen face a buying public which is critical, cautious, poor and thrifty. Only the most effective sales organization can sell in such a market. Decreased overhead charges, lowered unit production costs, maintenance of quality, and selling skill are necessary for the welfare of each individual producer and they are no less essential as steps toward better business for the entire country.

BIG REAL ESTATE DEAL.

Chemical Companies Purchase Buildings in Montreal for New Factory.

Announcement is made by Mr. Leo G. Ryan, President of the Wingate Chemical Company, Limited and of the Mallinckrodt, Chemical Works of Canada Limited, of the purchase of a new factory in Montreal.

The deal is one of the largest in commercial real estate in some months, the amount involved being well over $100,000. The building is located in the heart of the wholesale district at 468 to 482 St. Paul Street West, covering some 9,000 square feet of ground. It is five stories high and has a basement. Over 40,000 square feet of floor space will be at the disposal of the two companies mentioned, and Smith & Nephew, Limited, another concern in which Mr. Ryan is interested, being devoted to the manufacture of Surgical Dressings and Sashena Towels.

Conditions in Toronto District

Mills Making Cotton Goods Busy But Prices Too Fine To Show A Proper Profit—Demand For Ladies Knit Goods Brisk—Some Unsettlement Generally Much of Which is Due to Imminence of Election.

By Our Toronto Correspondent.

Mills making cotton goods continue to be busy. The business in broad cottons is brisk, the reason for the improvement in denims being that the overall business has recently picked up very considerably. The mills running on narrow fabric are also busy—in fact, those putting out elastics have just about as much business as they can handle.

But, while mills making cotton goods generally are pretty busy in Toronto and Hamilton, and the district as a whole, it must be remembered that, both in yarns and in broad stuff, prices are very fine. Yarns, of course, had been very dull for a long while, and especially at the beginning of the year. Then, about September last, for reasons which are well understood, they picked up considerably. More recently, however, the cotton market broke, and the prices of yarns were very materially reduced, both here and in the United States. In the latter country, indeed, yarns are being sold at prices which, so far as it is possible to figure on them mustspell a loss to those selling them. In Canada, they are being sold at prices which show no profit. The result of all this is that in the United States spindles are being closed down, and in Canada conditions the reverse of stimulating prevail.

Confidence has been shaken by the drop in the cotton market, and this will have an increasingly detrimental effect on activity. Then, too, there is a certain amount of unsettlement due to the imminence of the general election as to which a word or two will be said presently.

Knit Goods And Hosiery.

The demand for ladies' knit goods is very brisk, but that for men's underwear is very sluggish. The deadest line in the whole knit goods outfit, however, is sweaters. In part, this is due to the fact that so many women of today knit sweaters for themselves and their families. But this cannot altogether account for the tremendous slump in demand. The country must be getting short of sweaters, but still there are no signs of improvement.

Mills running on silk hosiery have been busy all the year, and just now they seem especially so. This is also the case in the United States. It should be emphasized here that the Japanese market, on which the whole thing depends, has, for some time, been jumping up in the most sensational way. Undoubtedly the Japanese have been "bulling" the market, and withholding for higher prices, and manufacturers in the United States are very much uncovered for raw material. The trend of the market is still upwards, and $8.00 silk, of the kind mostly used in good class hosiery, is freely predicted—it has now, at the moment of writing, reached $7.55. However, the upward trend is so fast that there will probably be a reaction before long. The trouble is that nobody can hazard a guess as to what it will reach. It may conceivably go up to $9.00 and then react to $8.00

Nervous About the Election.

Just now in reference to cotton manufactures, it was stated that there was a good deal of unsettlement attributable to the imminence of the general election. Undoubtedly, in all lines of the textile industry, apprehension of the gravest kind is felt as to how the election may eventuate. The danger that the industry—and especially, perhaps, that branch of it devoted to woollens—has to fear from the amiable practice commonly spoken of as "monkeying with the tariff" is twofold.

In the first place, there is the possibility of an increase in the British preference—indeed, the Progressive party has, as one of the main planks in its political platform, in addition to another plank advocating "an immediate, substantial, all round reduction of the customs tariff" the increase of the British preference to fifty per cent of the general tariff rates. Now, just before the war, most of the woollen fabrics worn in Canada were imported from Great Britain. During the war, however, and immediately subsequent thereto, the position of the industry became vastly improved, as a result of the fact that conditions during those years were such as to limit importation from Great Britain and to give the Canadian mills the opportunity of supplying a larger share of the Canadian market. But the conditions to which allusion has just been made did not last sufficiently long to enable Canadian woollen manufacturers to get their products established on the Canadian market with adequate firmness, and, at this actual moment, increasing British competition, helped by the present exchange situation, is a serious threat to their industry.

In such circumstances, to increase the British preference, which is, of course, tantamount to reducing the protection on Canadian woollen goods in competition with importations from Great Britain, would have a gravely detrimental, if not a totally destructive, effect on the Canadian woollen manufacturing industry. But that is not the only danger to be apprehended if the Progressives, either alone or in conjunction with another party, get anything of their own way on fiscal matters. The Progressives further demand that an effort be made "to secure unrestricted reciprocal trade in natural products with the United States." What they want is that their own agricultural products should be admitted duty-free into the United States. It was just to guard against this—in other words, to safeguard American agriculturists from competition from Canadian agricultural importations—that the United States' Emergency Tariff Act was primarily framed. In such circumstances, it is obvious that if Canadian agricultural products are to be admitted duty-free into the United States, it will only be in return for concessions in the way of large reductions in the Canadian tariff on manufactured commodities—**including textiles**—from the United States.

LANCASHIRE COTTONS.

Change For The Worse In Matter of Unemployed.

Unemployment depression continues to deepen in the Lancashire mill district in England. An increase of 18,000 unemployed was registered at the Labor Exchange for the week. A change for the worse is markedly noticeable in the cotton trade, and in the engineering plants there are indications of early activities.

British Trade News

(From our London Correspondent.

London, 21st Nov. 1921.

A rather interesting invention has just been discovered. Mr. Sam Hartley, of East View, Barnoldwick, has patented a mechanical device for threading shuttles that does away with the hitherto universal practice of "kissing" or drawing the yarn through by means of suction from the lips. The outstanding feature of Mr. Hartley's invention upon which he has been experimenting for two years, is that it is adaptable to any kind of standard shuttle used in woollen or cotton weaving, thereby entailing no additional outlay in replacing shuttles already in stock. It is of simple construction and instantaneous in action, and has stood the most rigid tests with both cotton or woollen yarns.

Fight Against High Prices.

There is a keen fight going on at present against high prices in the cost of production at the mills. Manufacturers of cloth say they are quoting prices which show them no profit worth talking about and they are just running their looms in order to give their employees work. They now contend that bleachers and finishers should cut their prices, as well as the manufacturers. Shippers say that they are working on very small margins. The question now arises: Why should shipers and manufacturers be the only two parties to work near to a loss? It is interesting to record that recently some large users of coloured yarns started their own dyeworks as Association prices were too high for them and it is also stated that many others would follow their example if money was not so tight. This little fight going on between the manufacturers and the combines is sharpening the wits of the mill men, who are doing their utmost to maintain the export trade, but are hampered with bleachers' and finishers' prices which are like millstones tied round their necks.

Textile Machinery.

Makers of textile machinery have had during the past couple of months a fine amount of business on hand and the shipments from Lancashire for October alone show that 13,666 tons were sent overseas, which is the highest monthly total since May last. In October 1920, only 3,758 tons were exported compared with 16,600 tons for the same period in 1913. For the ten months January to October, 125,293 tons were sent abroad as against 39,574 tons in October 1920 and 147. 125 tons for the corresponding period in 1913. So far this year buyers in India have taken 36,479 tons more than, and larger quantities have been purchased by JJapan, China, France, U. S. A., South America and Canada.

Woven Fabrics.

From time to time I have mentioned the various schools and technical classes that are established in the United Kingdom for encouraging proficiency amongst students and workers of the textile industry in all its various branches. Amongst them is the Crompton Memorial Prize Scheme of the Textile Institute—the awards of 1920-21 of which have just been announced—which requires each competitor to submit 36 woven specimens representative of at least five of twelve groups of fabrics. Candidates must have previously secured a certificate equal to the Honours Grade, Section A, of the City and Guilds of London Institute, or have entered upon a third year of a day course of training

in textiles, and £100 is offered in prizes, the first prize this year being £35 and a parchment certificate; £25 the second; £15 the third; and small awards of £5 each. There were 15 competitors and the adjudicators constituted a large committee with several persons acting in an advisory capacity, so that manufacturers, commerce, and arts were represented. In many respects this year's exhibits showed considerable advances in quality of the results of the work. Some beautiful specimens were shown in design and structure of fabrics and a student of the Manchester College secured the first prize. These competitions are invaluable in the schools and colleges, as they bring out the best of men and the best of talent.

Jealousy of Trade Secrets.

While writing on the Textile Institute, I am reminded of a paper read some time ago by Major H. J. W. Bliss, Director of Research, of the British Research Association for the Woollen and Worsted Industries, who stated the desirability of a consulting department. In the woollen industry, he added, there were many firms which had never made a practice in the past of employing a consultant. The reason often was that they had, or believed they had, methods secret to themselves which they were afraid of disclosing for fear that the knowledge might leak out to rivals. In dyeing, thanks to the work of the Society of Dyers and colourists there was a good system of abstracts and indices and the Tetxile Institute was making an effort to meet the need for the future in the systematic abstraction of relevant literature and patents outside dyeing. So far as one could judge at this early stage, the system of his Association was standing the test of experience and the index would become rapidly and increasingly more valuable as additional workers were available.

Wool.

There is a good deal of "wrangling" going on to get the prices of raw wool down. Manufacturers are not yet satisfied with the values and the news that wool at Antwerp went at 5 per cent lower than the London Auctions held some weeks gave considerable satisfaction to buyers. But the market is erratic. For instance, merinos are at present in favour of the buyer, while topmakers are maintaining the prices for spot or future deliveries. At all events everybody is concerned about the future and the impression prevails that cheaper wool is inevitable. Spinners are quieter as regards buying and the desire to be able to offer manufacturers cheaper yarns is becoming more pronounced. Indeed it is recognized more than ever that 64's tops must get bac kto a basis of 84 cents if the piece end of the trade is to be rehabilitated and although this means a sensible decline from what tops have been recently sold at, everybody realizes how imperative it is to do this if the whole trade is to move toward a permanent improvement. In crossbreds 40's prepared tops are going at 25 cents, with 29 cents for 46's carded. English and home wools are fairly steady with a fair amount of business being done in fine qualities.

The London Wool Sales for 1922 have been fixed up to July next. They open on January 10. The next sales are March 7, May 2, June 13, July 18. On November 22, this year, extensive colonial sales will be opened.

Trade in General.

In the cotton trade many mills are still idle and unemployment is still a great factor to contend with. Cotton mill owners are complaining of the dullness of trade. There is a continued weakness in raw cotton circles.

The heavy woollen trade reports an improved tone, but the depreciated rates of exchanges abroad are hampering business on export account while the home trade brightened up with the sudden approach of winter. Still things are not what millowners desire and I always turn to the employment registers to guide me in gauging what trade is like. They are the true speaking barometers. At Dewsbury 3,661 names are on the idle list and at Batley the total reaches 3,200. If mills were busy these people would be working; if they are not we find the workers on the register. Outside the blanket mills short time working is the rule.

The wholesale and retail clothiers report a slight improvement in demand for overcoatings and heavy winter suitings, otherwise "there is nothing doing".

In all branches of the textile industry attention is mainly devoted to the export trade, great effort being made to bring about a more satisfactory state of affairs.

Half Time for Cotton Workers.

This week the Master Cotton Spinners' Federation decided, owing to the severe trade depression, to take a ballot of the members using American cotton, as to whether they are agreeable to curtail yarn production to the extent of 50 per cent from now to the end of the year. The voting papers have to be returned by the end of the month. If the owners of 80 per cent of the spindles are in favour of the scheme the short-time proposal will be put in force at once. The restriction of output scheme affects 40,000,000 spindles and if carried through will mean that 200,000 operatives will have to work half-time.

Canadian Chamber of Commerce.

I remind Canadian manufacturers of the establishment in London of the Canadian Chamber of Commerce. It is promoted to encourage Anglo-Canadian trade and commerce, the development of Canadian industries by British capital and the furtherance of Dominion interests in the United Kingdom. The Secretary is Mr. R. B. Stewart, Canadian Chamber of Commerce in London, 55 Holborn Viaduct, London, E.C. Anyone who wants information should not hesitate to write Mr. Stewart.

CARPET MARKET.

Prices Inclined To Have a Hardening Tendency In New York.

Buying in the floor covering market continues at a good clip in New York. Prices are inclined to have a hardening tendency. The out-of-town demand for Axminsters is well maintained, although the individual orders do not call for very large amounts. There has been considerable replacement business from certain districts in the South and Middle West, where some lots of red and green mixtures have been eagerly bought. The local trade for domestic rugs and carpetings is reported as satisfactory. The market shows a general steadiness in practically all quarters, which would seem to indicate that the present steady undertone is not due to a mere holiday buying spirit. The public is absorbing good quantities of rugs.

Imported rugs of ordinary weaves are heard of more frequently of late, but the few parcels that are offered by various distributors need cause little alarm that the market will be swamped with the foreign article. Chenilles and Axminster squares of Scotch and English manufacture enjoy some popularity.

NEW COTTON MILL.

Proposal to Establish One at Welland, Ontario.

A cotton mill that will employ 200 persons will be established at Welland, Ont., provided the by-law passed at the last Town Council meeting meets with the approval of the ratepayers. The proposal was presented at the Council meeting by Mr. B. J. McCormick, Welland's Industrial Commissioner. C. T. Grantham, formerly manager of the Empire Cotton Mills, has the plans in hand. He is asking for the passing of an industrial by-law to fix the assessment on the lands selected.

This concession is to be granted him as trustee, and is to be effective only when active work is begun. The by-law will be submitted to the ratepayers on January 2nd.

SCOTTISH TRADE DELEGATION.

Woollen Manufacturers to Pay a Visit to the States and Canada.

A delegation of representative members of the Scottish woollen trade are planning to visit Canada early next year. Present plans are for a business visit to the United States and Canada of seven or eight weeks' duration, for the purpose of educating the Scottish manufacturers as to the immense possibilities of the North American markets.

Fifteen or twenty members of the Scottish Woollen Trade Market Association, Ltd., Edinburgh, will comprise the delegation. This Association is a company that does not trade for profit, and is registered under the sanction of the Board of Trade. The party will leave in January, and call first at New York. After visiting the principal points in the United States they will come to Canada early in February, calling at Montreal, Toronto and possibly Hamilton.

The Association represents 75 per cent of the entire output of woollens in Scotland, and the delegation will represent about one-half of the total output. Arrangements are being made for various trade organizations to meet the visitors.

IMPROVED TONE IN WEST.

Active Business in Furs and Clothing in Prairie Provinces.

Furs and ready to wear clothing, both sexes, showed decided improvement throughout the prairies the past week. The low price of furs is attracting many buyers, jobbers quoting even higher prices for replacement in medium and good fur garments than the retailers are selling their stock at to-day, says a Winnipeg despatch.

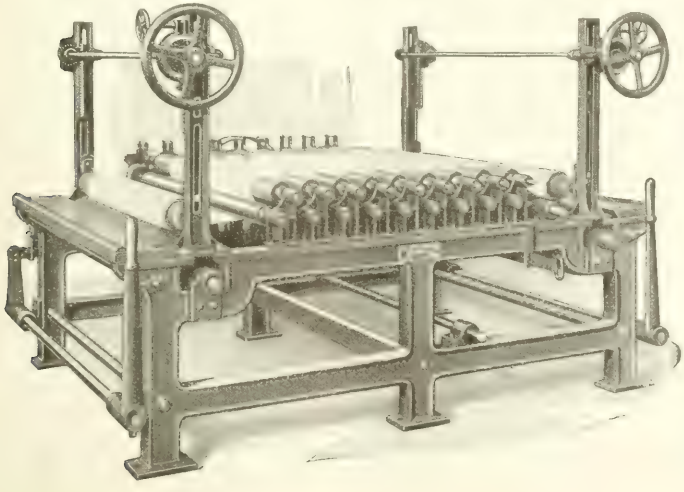
One manufacturers' agent, Rod Weir, representing a Montreal company, who has been selling goods from the lakes to the coast for forty years, says that he sees fine prospects for next year's men's clothing market. He exhibited one order from a Vancouver retailer for forty thousand dollars worth of suits and overcoats. He does not think the market will be much lower next year, but says it will be no higher.

A NEW FABRIC BREAKER.

Textile-Finishing Machinery Co. Fatents Machine Which Will Replace Older Types.

At the International Textile Show held at Boston, the Textile-Finishing Machinery Co. of Providence, R.I., had a new type of Fabric-Breaking machine on display.

This machine is designed for use on fine cotton, silk and cotton, or all silk fabrics, after the full finishing process and immediately before the process of putting up goods for the market. The machine is designed to replace such types of machines as the old-fashioned button breaker, which never really proved efficient. The particular machine in question has only recently been patented, but was exhibited after very satisfactory trials on various types of goods in the company's factory, through the kindness of some of our friends in the finishing business.



This firm also exhibited a patented Sectional and Reversible Scrimp Rail, which may be applied to practically any type of open width machine in the textile bleaching, dyeing and finishing business. Also they had on exhibition various types of automatic tenter clips for use in connection with mercerizing or finishing tenters. Their display of photographic illustrations covered a complete range of machinery for the singeing, bleaching, mercerizing, dyeing, printing and finishing of cotton piece goods, and all silk piece goods as well as bleaching, mercerizing and dyeing of cotton wraps, skein mercerizing and equipment for bleaching coton raw stock.

HAROLD B. FISK.

New Manager of the Walsh Plate Works, Drummondville, Que.

HAROLD B. FISK who was recently appointed Manager of the Walsh Plate & Structural Works, Limited, at Drummondville, Que., was born in England, 1885. He was educated at the Bishops Stortford Grammar School, the Kings College, London. After serving as a pupil with Baily Grundy & Barrett, a firm of mechanical and electrical engineers, at Cambridge, England, he came to Canada in 1907, entering the service of the Shawinigan Water & Power Company as Operator in the Montreal Terminal Station, being shortly transferred to the head office of the Company, in Montreal,

Mr. Fisk also saw service with the British Canadian Power Company, at Cobalt (now the Northern Ontario Power Company Ltd.), being first assistant to the General Superintendent and afterwards Superintendent of the Metaetchouan River Power Development. Also with the Toronto Power Company, at London, Ont.; the Kaministiquia Power Company at Fort William, Ont.; and from 1916 to his present appointment with the Southern Canada Power Company, as Superintendent of the Drummondville Division.

Mr. Fisk was admitted a Member of the American Institute of Electrical Engineers, August 1919.

At the Textile Show

ALLEN COMPANY.

At the International Show at Boston, the Allen Company, New Bedford, Mass., exhibited their well-known line of Patent Wooden Beam Heads, showing all sizes. They also showed their new Combination Section Beam, which is the latest improvement in the section beam line, and is designed to stand up and meet the requirements of the present day hard use which is required of these beams.

They showed a Combinatoin Loom Beam which is made on the same general construction as the Combination Section Beams, with a pair of Adjustable Loom Beam Heads which are adjusted on the Loom Beam between the end Heads.

They distributed folders, as well as catalogues, a copy of which will be forwarded to any mill man who might desire one.

NASH ENGINEERING CO.

The Nash Engineering Company, South Norwalk, Conn., exhibited at the Boston Show their new textile drying device for drying the textiles right on the machine. The advantage of this drying device is that it eliminates the re-handling of the material, as the drying is all done right on the machine and is more uniform and more complete. It is claimed by the makers that this apparatus is very simple, and costs less to operate and install than other dryers.

They also showed an exhibition of their line of standard air compressors and vacuum pumps. Among those in attendance were Mr. G. B. Wright, I. C. Jennings, H. M. Welley and G. H. Gleason.

SCOTT & WILLIAMS, INC.

The knitting industry is favored more than any other branch of textile manufacturing with frequent improvements in machinery that make its products more attractive and desirable, and its processes more automatic and efficient. The rapid growth in size and importance of the knitting industry is due in no small measure to this advantage which it enjoys as a result of the courageous initiative and inventive genius of its machinery builders.

The latest development along the line of improved knitting machinery is a machine for making half hose automatically, built by Scott & Williams, Incorporated, 366 Broadway, New York, which was on exhibition at the Boston Show. It is known as Model H-H. In addition the firm has brought a greatly improved sinker or web-holder device for Model K machines which will be appreciated by manufacturers and purchasers of women's seamless hosiery.

The new Model H-H machine for making half hose automatically is equipped with two sets of needles, one set being carried by a dial, the other by a cylinder. It knits the usual one and one rib fabric for any desired extent for a rib top, and then automatically changes from rib to plain by transferring the stitches from the dial needles to the cylinder needles, thus avoiding all hand transfer operations. The dial needles are of novel construction and have no latchets or rivets, and are peculiarly well adapted for use in the small diameters required for hosiery purposes. By the use of this needle the difficulties attending the latch needle in the dial of a rib machine are completely avoided.

The machine in appearance and general design is quite like the well-known Model K. machine, and has been so constructed and designed that it is readily possible to change machines of former models of the "Universal" type to this highly comprehensive Model H-H machine. This fact will be greatly appreciated by the mills.

With the needles in the machine bare of fabric, the machine starts knitting a stocking by introducing a thread first to a cylinder and then to a dial needle and then immediately proceeds to knit what is known as a "French Welt," which, as the trade well recognizes, is the most acceptable form of finish for a half hose. This welt can, of course, be made of any length desired, and inasmuch as it is started with a selvage course, no cutting of the fabric or parting of the fabric or parting of the fabric by drawing of threads is required, and special provision is made whereby no loose ends are permitted to protrude from the finished article, which is dropped from the machine.

Every modern refinement of the seamless half hose of to-day is accomplished by this machine. Being provided with five yarn changing fingers, changes of yarn can be effected at any point throughout the stocking. High spliced heel and toe, reinforcement of the heel and toe, with ring toe, ring top and plating, are all as readily attained as on the Scott & Williams' ordinary Model B machine.

WOOL AND WOOLLENS.

No Confidence In British Centres That Stronger Position Will Be Lasting.

The strength of the raw material supports the market for the wool products in the Bradford and other British centres, according to mail advices. But there is no confidence that the strong position will be maintained to the end of the year, and there is fear that some break in the raw material market may carry down with it the rest of the market, for there is nothing that has developed other than in raw material to give substance to the revival that started some time ago. Owing almost wholly to the advance in wool is due the higher level of prices for tops and yarns.

At no time during the past three months has the situation been satisfactory to the majority of Bradford traders. Many traders anticipated a decline long ago, but instead prices kept to the upward path. The rise in wool, tops and yarns has allowed piece goods holders to unload dear stock lots of cloth at better prices than they otherwise could have done. The elimination of extremely low prices in the piece goods ends branch of the wool market has been the best influence the raw wool advance has had upon prices, but even this is of doubtful value.

Many firms still are burdened with hear stocks, and credit is curtailed in many cases. Some scheme of financial assistance probably will be inaugurated in the near future for the benefit of firms in need thereof. One scheme discussed is that fifty men engaged in the wool textile trade, with the support of the banks, agree to take up £1000 fully-paid shares, and so supplement the share subscriptions by entering into a guarantee to the amount of £20,000. thus making available a capital of £1,050,000.

COMMERCIAL HONOR.

A fine example of commercial honor and generosity has been set by two brothers, sons of a former Bradford business man. On Monday a number of creditors of the late Mr. John Hellewell, who executed a deed of assignment twenty-three years ago, received the appended communication from Mr. R. S. Dawson, chartered accountant, Bradford:—

Dear Sir,—I am acting on behalf of Harry Hellewell, Esq., and David Hellewell, Esq., sons of the late John Hellewell, Esq., who was in business as a worsted spinner at Albert Mills, Longside Lane, Bradford, and who executed a deed of assignment on the 10th day of May, 1893.

They have instructed me to pay off the balance of the debts of their late father, together with an amount for interest equal to the amount of the unpaid balance.

If you will complete the enclosed form of receipt and return to me, will forward you cheque for £—— being double the unpaid balance of account owing to you.

It is understood that the amount involved in this very generous action on the part of the two sons is over £6,000.

Mr. David Hellewell, who carries on business as a yarn merchant in Bradford, is prominently associated with the amateur Rugby game in Bradford. His brother, Mr. Harry Hellewell, who is associated with him in this matter, resides at Oakfield, Lightcliffe, and is in business as a Botany worsted spinner at Luddendenfoot.—The Wool Record.

Practical Notes on Drafting Rolls

BY PRACTICAL MANAGERS.

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It has been well said that drafting or drawing rolls are the "life and soul" of such machines in a cotton spinning mill as drawing frames, fly frames, ring frames, mules, and also to a lesser degree in sliver lap and ribbon lap machines and combers. Seeing that this is a practical fact the efficiency of the roll drafting operation depends on quite a good number of details each of more or less importance.

Bottom Rolls For Drawing Frames.

The principal features of importance that ought to be considered in connection with the bottom rolls of drawing frames are: that they are correct in diameter according to the type of cotton to be spun, amount of draft, speed of rolls, and weight of sliver fed, in order that the pairs of rolls can be set the proper distance apart. Correctness in number, shape and depth of flutes in the bottom rolls are very essential, and subsequent maintenance of cleanliness by periodically removing all impurities such as leaf, grease, broken seed, etc., from between the flutes is very desirable. The foregoing also applies to the bottom rolls in other machines. The front bottom row of drawing rolls ought to be case-hardened all over, bot the three remaining bottom rolls are usually only case-hardened at the necks and squares in order to reduce the amount of wear at the necks and prevent as much, slackness at the joints.

The fluting of bottom rolls is necessary in order to frictionally rotate the top rolls with the minimum of slip and thus obtain a good grip on the cotton passing between each pair of rolls.

During the scouring or "cleaning through" of the bottom rolls, say, once every three or six months, there is an excellent opportunity of examining them to discover any possible departure from being absolutely level and adopt remedial measures where necessary. Drawing frames are heavy machines compared with the space occupied and are apt to sink in some cases with the result that the frame is out of level, hence, the sooner they are lined up the better.

The Top Rolls.

During ordinary practical working the top rolls need more attention than the bottom rolls, as the latter only need disturbing on special occasions after they are once exactly level and set properly. The top leather covered rollers, however, are constantly being acted on by clearers while in the frame, and changed for newly covered, or re-varnished, rollers from time to time. Top rolls (except in the case of self-weighted top rolls) are covered with woolen cloth and leather because if an uncovered smooth metal roll was weighted and rested on the bottom fluted roll, any cotton passing between such a pair of rolls would be damaged. The woolen cloth provides a foundation sufficiently elastic, while the leather, which tightly encircles the cloth, grips the fibres without damage nor causing them to adhere or lick round the leather covering.

The top rolls ought to be the correct type, loose or fast boss, and single or double boss. The rolls ought to be correct in length so that they will not bind sideways, and also in diameter and without variation. Whenever any cotton laps round a leather covered

top roll no metal picker should be used to cut the lap off, otherwise the leather is almost sure to be more or less scratched.

Covering Top Rollers.

The application of woolen cloth and leather to top rolls ought to be especially well accomplished. The excellent modern appliances which are available to assist in the covering of top rolls being almost perfectly done leave no room for faulty workmanship to be excused. Woolen cloth of a reliable make and suitable weight per yard should be used, and the increased diameter of the roll after the cloth is applied should not be such that the leather covering will cause too large a diameter of the roll. Nor should the opposite extreme be the case. The woolen cloth ought to be securely fixed to the bare roll by using a good roll-cloth paste such as can be made from 2 pounds of best flour and ½ pound of resin, along with a little boiling water. Another good recipe consists of 1½ pounds of best flour, 1 pound of resin, 2 ounces of Venice turpentine, and ½ gill of boiled oil. Satisfactory paste must attach the cloth securely to the roll and dry quickly. Furthermore, the paste ought to spread evenly in a thin film and not set so hard that it reduces the cushioning qualities of the cloth. No matter whether the cloth is pasted and cut by hand or machine the bevel piecing should be well made and be free of any fault which would cause jumpy running.

The selection of the leather skin calls for much experience in the handling of roll-leather skins. Some of the desirable features of good skins are as follows:— Smoothness and firmness of the grain or polished side, and yet possess a certain amount of elasticity, or possess the quality of expansion and contraction; the flesh side of the skin should have a nap face of particularly soft feel; there should be no indications of overshaving and knife cuts on the flesh side, nor should there be any fine hairs on the grain side; the hardness of the grain side ought not to be attained by the methods of finishing; skins should be of the proper thickness according to the class of yarn to be spun; and the shape of the skin should be such that it will be economical, viz.: enable a good number of cots to be obtained. The skins should be cut up in strips of the correct width, according to the rolls to be covered, then the strips should be cut the proper length to accurately fit round the boss of the roll and have bevelled edges for the joint. Machine splicing of leather is far preferable to hand splicing because the long knife used in the old hand method is comparatively flexible and is not very sure of making even bevels on all the cots. The machine method of cutting or splicing the previously cut long strips is much quicker, the bevels are uniform, equal in length, greater production, and the machine is simple in construction and operation. The cots must not be too large or else they will fit slackly on the roll and be too spongy for satisfactory drafting. On the other hand, if the cot is too small it will fit too tight when being drawn on the roll and such cots generally burst during the pulling-on operation. After the cots have been drawn on the rolls they are submitted to an "ending" operation. The phrase "ending rolls" means that the end parts of the leather cots, which project over the woollen cloth foundation, are turned inward and excessive leather burnt off. A special thin hard wood burning lath is generally used while the roll is rotated by contact with a 12-in. plain cylinder, the roll ends being carried in a pair of brackets. "Ending" of rolls is necessary in order to trim up the edges of the cots, remove excess leather, and by turning over and inwards the cot ends the woollen foundation is entirely covered, thereby preventing oil waste reaching the cloth. Licking or lapping of cotton when drafting the sliver or roving is also prevented at the roll ends. Before newly covered rolls are used for drafting they should be submitted to a calendering operation, either by means of a machine or by hand. Calendering is of much assistance in rounding the roll up by eliminating the flatness of the joint, and burnishing the roll, because the cot is somewhat stretched during the pulling-on operation, and the ending process tends to slightly blister the cot ends.

Covering Double-boss Rolls.

A detail in connection with the covering of double-boss solid rolls which should receive attention is that the leather cot should be of the same thickness for one boss as the other. Also, the cots must be pulled on in the correct direction so that one bevel piecing will not turn up when placed in the frame and is actually drafting the cotton.

Varnishing Top Rolls.

The varnishing of top leather covered rolls is very largely adopted especially on such as drawing frames, sliver lap machines, ribbon lap machines, and combers, and is an excellent substitute for the natural grain of the leather which wears away during the ordinary drafting of the cotton. The grain of the leather on, say, the front top rolls of drawing frames, whose speed is anything from 250 to 400 revolutions per minute, wears out fairly quickly. It then presents a rather broken and rough surface, which would obviously cause excessive licking or lapping of the cotton round the rolls if not varnished or recovered. When the leather covering is by no means completely worn out, and yet its surface is too rough owing to the roll being weighted and driven by frictional contact with the bottom fluted roll, in addition to the large weight of cotton dealt with, the varnishing of the partly worn leather covering acts as a substitute for the natural grain. Thus, the top roll is again possessed of its drawing properties and can be used satisfactorily for a further period with a consequent considerable econ- When a top leather roll is properly varnished and dry, omy in the total cost of the roll covering department. the surface ought to be smooth and hard without cracks, and not present a surface to which dust and fibre may adhere. In some mills the amount of clearer waste is adopted as a guide as to whether the top rolls require replacing with newly covered rolls or re-varnished rolls. Another rule is to supply each tended with one set of newly varnished rolls per week or bi-weekly, each tender having a spare set of top rolls. A third rule is for the undercarder to inspect all top rolls on Saturday and chalk mark all rolls which must be replaced by newly covered ones or re-varnished rolls on Monday morning.

(To be concluded).

We regret to record the dealth of Mr. Albert Hellwig, the founder, President and Treasurer of Steel Heddle Manufacturing Co., Philadelphia, Pa.

Bleaching Cotton Yarn with the Hypochlorites of Lime and Soda

Notes on the Different Methods in Use.

By RAFFAELE SANSONE.

The bleaching of cotton yarn has received a great deal of change during the last decades, and the construction of the plants in use at present for the purpose varies very much, and often from works to works, in accordance with the scale and importance of the treatment, the necessity of substituting the employment of labour by mechanical applications, and the stronger or smaller competition encountered on the different markets.

Amongst the different plants employed for the bleaching of cotton yarn with hypochlorite of soda or hypochlorite of lime solutions, the following have found the greatest application:

1. The ordinary vat bleaching plant.
2. A mechanical apparatus imitating the treatment by hand as conducted by the ordinary bleaching or dyeing vats.
3. The yarn washing machines adopted as a bleaching means.
4. The plants for treating cotton yarn continuously in a bath of hypochlorite, acid, rinsing water, soap, etc.

The Ordinary Vat Plants.

In some dyehouses and bleachworks it is necessary to conduct the bleaching operations from time to time on small lots of cotton yarn, and for the purpose the old method of treating by hand in wooden vats has been found very useful. In this instance, after the yarn has been well boiled out with alkaline lye for liberating it from all impurities, it is taken by two workmen, and is entered on sticks, while still wet, in a heavy wooden vat, containing a solution of hypochlorite of soda, measuring generally one and a half to two degrees twaddle. The sticks used for the purpose are generally of wood, and they are soaked for some time in the bath of treatment. In this vat the workpeople treat the skeins, or hanks, of yarn in such manner as to expose every portion to the action of the hypochlorite bath.

Manner of Turning the Hanks of Yarn.

In some works the workpeople stay from the beginning to the end before the bleaching vats, and turn the different hanks on the first stick one after the other, moving this forward, and continuing the operation on the following sticks until arriving to the last stick. After this they push all sticks to their former position, and start again turning with the first and following sticks, repeating this until the desired white has been obtained.

During the turning each workman lifts one half of the skeins with one hand, while with the other he keeps down the stick against the bleaching vat. When the workmen have obtained in this way a pale cream colour, they draw the hanks out of the bath, and place them, through the assistance of other wooden sticks, previously wetted in the hypochlorite bath, across different parts of the vat of treatment, allowing a good portion of the liquid they contain to return in the original bath, that is later run off, and replaced with running water, entering at the top of the vat, and escaping at its bottom. When this has been accomplished they lower the hanks of yarn in the new bath, and continue their agitation as before for some time, raising again the material for causing all excess of bath to drip out, and following the rinsing by a weak bath of sulphuric acid, measuring from one quarter to one half degree Baumé. In this the yarn is handled for one half hour, treating later with a second rinsing water, and with a weak soap bath, during which the blueing of the white produced is also conducted.

Apparatus for Imitating the Bleaching Operations Conducted by Hand.

Before the war an apparatus was introduced where the treatment conducted by hand was very well imitated through perfectioned mechanical means. The apparatus consisted principally of a long wooden vat, the length of which varied more or less in accordance with the number of bundles of cotton yarn to be treated. On the upper and longest sides of the vat were arranged semi-circular openings for carrying the sticks, containing the hanks of cotton yarn to be treated. These sticks, that were of special form, were turned by a special mechanism worked on an upper carriage, running from one extremity to the other of the vat of treatment on iron rails fixed at a certain height.

Mechanism for Turning the Hanks.

A very ingegnous mechanism made the hanks of cotton yarn turn in a more energetic, regular and thorough manner than would have been accomplished by hand; making them also oscillate sideways. The operation of turning the hanks took place only when the carriage run forward in one direction, whereas on its return to the starting point, a special mechanism replaced the sticks in the openings of the sides of the vat precedingly occupied, for being moved several times through the continued running backwards and forwards of the carriage.

The movement of the carriage conducting the treatment of the hanks took place quite automatically and only one workman could survey two machines, providing these were placed in a favorable position. The apparatus was generally constructed for treating twenty bundles of yarn per time, being supplied with a special mechanism for lifting simultaneously all the hanks of yarn from the bath of treatment, and bringing them, through the movement of the carriage itself, into another vat of treatment, or elsewhere. At the same time a new already prepared lot is brought on the first vat, and its treatment is initiated without loss of time.

Yarn Washing Machines as a Bleaching Means.

In some works the machines constructed originally for the washing of cotton yarn hanks are employed for bleaching operations. One of these consists principally of a treating vat, on which a series of wooden or glass arms, attached to an endless copper chain turn on two vertical wheels in one only direction; such

wheels being turned on their part by a small electric motor, or by any other convenient means.

Method of Working the Plant.

The chain supporting the arms is caused to run slowly forward, and a workman suspends on these the hanks of cotton yarn in an open spread condition, for transporting these slowly through the bath of hypochlorite of lime, or hypochlorite of soda, while the arms themselves turn slowly exposing all parts to the action of the bath of treatment. In this case the treatment is continued until the desired white has been produced. The hypochlorite bath is then run off, and replaced with rinsing water, that is caused to enter through a special tap, and runs off through an outlet tube, where the material is treated for some time. After the rinsing a weak bath of sulphuric acid is entered, treating from ten to fifteen minutes. Another rinsing is then caused to follow. When the second rinsing has been conducted, in the last rinsing water a certain number of litres of soap solution is added, with a fixed percentage of blueing agent, and the treatment is continued for about five minutes. After which the hanks of cotton yarn can be taken out and dried.

Plant for Treating in Continuous Form.

A plant for bleaching hanks of yarn in continuous form is constituted principally of a large wooden ring, divided in twelve compartments of different sizes, only the last of which is supplied with an open steam coil for any eventual warming operations. The first and second compartments are destined to treat the skeins of cotton yarn with a bath of hypochlorite of soda, or hypochlorite of lime, the strength of which varies from one to two degrees twaddle; the third, fourth, fifth and sixth compartments being destined for treating in separate baths of running water, whereas the seventh compartment is for treating with weak sulphuric acid. The eighth, ninth, tenth and eleventh compartments are destined for the second rinsing in four separate waters, and the twelfth, or last, compartment is destined for eliminating, through the assistance of a warm soap bath, the last traces of acid that the preceding rinsing waters could not extract from the material. The soap bath also contains the coloring matter necessary for the blueing operations.

Supporting Arms For the Hanks.

The skeins of cotton yarn are supported in this plant by a large number of cylindrical arms, generally of hard wood, and sustained all round a central shaft, turned by a special mechanism, that also obliges each arm to turn on its axle. In this way the arms are brought above one compartment of treatment after the other, turning continually the hanks of yarn. The above plant is supplied with an empty compartment, in one half of which a workman charges the hanks of yarn in a wet condition, that have been deprived of the greater part of their impurities through a prolonged boiling in an alkaline lye, while in the other half another workman takes off, or discharges, the bleached hanks. For facilitating the work, and avoiding any entanglement of the hanks that might take place, giving also the time to the different baths for reacting properly on the material, the whole plant is moved very slowly.

Practical Points on Carding

In the South of Scotland Technical College, Galashiels, Mr. J. Dempster gave the fourth lecture of the specialist series. Speaking on the subject of carding, he made some pithy remarks on what he termed the human equation. There was, for example, the self-complacent individual who would be shocked were the speed of his condenser surface drums to fall below 28 r.p.m., while he would be totally unconcerned as to the disastrous effects in the spinning and weaving of his craze for speed.

Then there was the man whose chief glory lay in the possession of some occult gift. He never (or "hardly ever") required to grind his cards. He could run them for years—on his own statement—without even putting on the grinder! "I have no doubt," said the lecturer, "he speaks the truth—but not the whole truth. During these years he has probably been throwing much good wool under the machine; packing it into the clothing; producing a nibby or pointed yarn (probably both) and has become a course of persecution to those who have to make good his defects."

Another type of carder was the economical machine keeper, whose modest claim to distinction lay in his passion for saving the pocket of his employer. He could take ten years' work out of a scribbler first swift and fifteen or twenty years' service from the clothing of his carder. This type of man would point with almost pardonable pride to some of his pet rollers. There would be no record of their age, but if they had not become "grey" in the service, they had at least become "bald." Even the oldest man in the carding room would have forgotten when they were put on, and, what was of more importance, when they should have been stripped.

"The commercial man," the lecturer continued, "is a great sinner and an adept at producing shoddy yarn from pure wool. Without him, the dealer in waste would cease to exist, while the evil results of his mistaken economies are apparent in every department from the carding room to the cropping machine. For every £100 he has saved the firm he will probably have cost his employers £1,000."

The lecturer then proceeded to make a few suggestions that might prove useful to beginners. "Keep your first swift (or rather, breast) substantially clothed," he said. "For wools of 50's to 58's qualities 70's or 80's count card clothing with tops to suit should be ample. Keep an open set on this part. Combing, not carding, is what is required. Run all doffers throughout the set (with the exception of the ring doffer) at the highest speed consistent with good workmanship. A low doffer speed, before the fibres are parallel, is a sure method of breaking them. Keep fancies that will stand up to their work. These will probably be more difficult to 'get away' than the soft variety."

In the course of the discussion which followed, some interesting points were made. The tape condenser, according to one speaker, did not work satisfactorily with more than 12 per cent. of oil; another thought that 10 per cent. of Price's oil was sufficient, while the chairman observed that since the "sale" yarns were sold on a basis of one-sixth loss, there must be many people making a satisfactory job at this figure.

On the discussion as to the advisability of maintaining the standard of one-sixth loss for the Scotch trade, some thought it was maintained because it paid the spinner to sell oil instead of wool. The lecturer had found considerable difficulty at one time in working a straight haired wool in a blend, but he found that the best results were obtained by oiling the ordinary constituents of the blend and allowing the straight haired portion to acquire its share by absorption from the other constituents during teazing and carding.

The question of humidity was raised, but none of those present had had any experience of artificially increasing the humidity of the atmosphere in woollen spinning, although it was known to be practised in the worsted and cotton trades. The chairman remarked that on Monday mornings it was almost impossible to start condensers on Saxonies; the oil seemed to set on the fibre like a varnish.

A yarn spinner quoted an instance where in using carbonised wool of 50's quality he had made quite a level yarn out of white, but in using the same wool in black it was all right to the finishing doffer, when it rolled round and excessive dropping took place. His remedy was to take the wool back to the teazing house and mix it with 50 per cent. uncarbonized wool.

The Use of Oil and Water.

The question was raised why water was used on wool at all, as that seemed to be the only advantage of an emulsion over the ordinary application of oil and water, the practical reason being to reduce the "fly" on the machines by reducing the tendency of batch, however, it was found that most of the water had evaporated. What had operated against the more extensive use of emulsions had been that Price's oil was so much in vogue, and it would not emulsify while its scouring properties were superior to others.

The use of high oil lubricating was also considered, and it was admitted that although white wool could be put through with a small oil percentage, dyed wool required very much more, and especially if the yarn had to be spun to a fine grist like 56 cut, 30 cut yarn in the same quality would require much less oil.

A question as to the speed of the fancy to reduce the tendency to "fly" was said to be only soluble by experience. This question, it was agreed, should receive more attention.

The lecturer was asked if he would approve of the use of a straight through set for the Scotch trade—i.e., two machines connected by a Scotch feed. He stated in reply that he would not approve because of the unreliable working of all the automatic feeds in use. For the Scotch trade it was almost essential to have a bank feed between the scribbler and intermediate, but many firms preferred bank feeds throughout as the yarns were stronger and had a better "skin."—The Wool Record.

Dyeing of Hosiery in the Roll

From the Manual of Hosiery and Knit Goods Dyeing, Published by the National Analine and Chemical Co., Inc.

Dyeing of cotton knitted goods in the roll requires the use of a dye kettle provided with a winch similar

This kind of kettle is usually built of wood, and should be fitted with pipes for an ample supply of water and steam. Regarding the latter, it is desirable in order to secure the best results, that the perforated outlet immersed in the dye liquor be so placed that there is an even distribution of steam across the full width of the kettle. If this is not attended to, there is a possibility of more steam in one place than in another, with the result that the goods will be unevenly dyed.

This preliminary treatment not only cleans the goods, but removes from the cotton those natural impurities such as oils and waxes, the presence of which prevents penetration of the dye and thereby causes uneven shades.

For light shades, or such shades as should be particularly bright, it is desirable that the goods be bleached. While there are several processes for bleaching, the one most commonly used is based upon the application of chlorine. Formerly, bleaching powder was employed almost exclusively, but in course of time, sodium hypochlorite solution made from it was gradually adopted and used at a strength of from ¾ to 1 deg. Tw. Afterwards, the "electrolytic" bleach gained prominence. This process is the production of sodium hypochlorite by the action of the electric current on a solution of common salt, and finally the direct use of liquid chlorine in connection with a solution of soda. As a matter of fact, the bleaching action of any of these solutions is the same.

After bleaching, the goods are well washed, given a light sour in muriatic acid, again washed and light soaped, when they are ready for dyeing.

Dyeing With "National" Dyes.

The boiled-out material is usually put into the dye kettle, which has been filled with water. The proper quantity of dyestuff weighed out and dissolved in hot water, and gradually added to the kettle while the goods are in motion over the winch. When all the dyestuff has ben poured in, there is then added for light shades, from ½ to 1 per cent. soluble oil, and ½ per cent. soda. For medium and heavy shades, besides the requisite amount of dyestuff, there is added 1 to 2 per cent. soluble oil, ½ per cent. of soda, and from 10 to 15 per cent. Glauber's salt (dry).

The temperature of the bath is important. After the proper additions of dye, etc., have been made, steam is gradually turned on, until it has reached 160 to 170 deg. F., for light shades, at which temperature it is maintained for ½ hour, with the goods in constant motion.

For medium and heavy shades, the temperature is gradually brought to the boil, and boiling continued for one hour.

After dyeing, if the bath has exhausted, the goods may be washed in the same kettle by running off, and filling with fresh water. If it is desired to save the liquor for a standing bath, the goods must be removed and washed in another machine.

In dyeing very light shades, on bleached roll goods, such as are intended for light blues, pink and tans, the utmost care is to be taken in making additions of

dye to the kettle. Always dissolve the dye in large buckets or half barrels, and transfer gradually through a fine sieve to the dye kettle. This will prevent spots appearing on the goods due to the undissolved particles and will also tend to reduce unevenness.

National Diazine Black DR.

In dyeing black with National Diazine Black DR on knitted glove fabric in the dyeing machine, the entire operation can be completed without removing the pieces from the kettle, by simply running off after each operation.

Glove fabrics are frequently dyed in open kettles provided with a sliding winch, mounted on skids permitting the winch to be moved to either end of the kettle. These winches are hand or power operated, and are very serviceable.

Artificial Silk

May Offer Severe Competition to the Natural Product of the Lower Grades.

Artificial silk may offer severe competition to the natural product of the lower grades as a result of present conditions in the silk market, the National Bank of Commerce in Montreal believes. In the November issue of its magazine, Commerce Monthly, it declares that the greatly increased capacity of domestic producing plants indicates that American manufacturers of artificial silk goods may in the future be practically independent of foreign supplies.

"The position of the United States in international trade in artificial silk has been radically changed since the beginning of the war," the bank says. "For some ten years before domestic production began in 1911 the United States imported artificial silk threads and yarn, although the quantities are impossible to trace before that year. From 1911 until 1915 both production and importation increased, the former more rapidly, so that in 1915 about 60 per cent of the total consumed in the United States was produced at home. The submarine warfare and the intense need of all textile materials in Europe, coupled with a reduced production in most European countries, caused a sharp decrease in imports at the same time that production in this country was rapidly expanding. In consequence 98 per cent of the 1918 consumption was of domestic manufacture. Soon after the close of the war European production was resumed and epansion begun and American imports in 1920 and 1921 approached in volume and greatly exceeded in value the high figures of 1914 and 1915, despite a greatly increased domestic production. In 1920 domestic yarns comprised about 80 per cent of the total consumption.

"The first producing plant in the United States was established in 1911 as a branch of an English firm and used the viscose method. For many years this was the only important produce in the United States. From the 1911 figure of 320,000 pounds the production of this concern mounted to 9,000,000 pounds in 1920 and at the present time exxpansion is under way which will more than double its capacity. The increased demand for artificial silk in 1920 led several other concerns to enter the field. The most important of these are affiliated with prominent manufacturers in Belgium, France and Italy.

"Although the potential production of plants now operating or under construction is far above any consumption figure yet attained, manufacturers believe that the market for artificial silk has as yet been only partially developed. It is significant that except for the latter part of 1920, when all textile industries suffered a depression, the demand for artificial silk from the beginning of the war so far exceeded the supply that the output of American plants was allotted to important consumers and until recently has rarely been sold in a freely competitive market. American producers have made little effort to expand their market as it was impossible during the war to increase production to supply new customers.

"Of the total consumption in the United States the largest share used in any one industry is in the manufacture of hosiery. In the last few years the production of sweaters and other knitted goods has been important. Artificial silk is woven with natural silk, cotton or other fibre into dress goods, such as satins and fancy silks, and shirtings and tapestry. Plushes, carpets and imitation furs are now made of artifical silk and many kinds of fringes, tassels and novelties.

"The manufacturer of artificial silk has also the opportunity of developing other products with the same equipment and raw material. By increasing the size of the aperture through which the cellulose solution is forced, artificial hair may be produced, of value in the manufacture of hats, upholstery material and fancy goods. By changing the shape of the aperture to a horizontal slit, he may make artificial straw, or by further widening the slit strips of artificial leather or cloth, ribbons ,or thin transparent sheets such as are used in facing envelopes and wrapping candies.

"A method has been devised in which net and simple forms of lace are produced in one operation, by passing the solution into engraved lines on a revolving cylinder, from which the finished product is continuously peeled as it issues from the fixing bath. Further progress in this direction may be confidently expected as the possibilities of cellulose are as yet far from exhausted.

"Artificial silk is chemically unlike natural silk and differs in most of its physical properties so that there has not been direct competition between the two fibres. In the period of activity in the textile markets which followed the close of the war, the demand for both these fibres exceeded the supply. Such substitution of artificial silk as was possible served only to release natural silk for other purposes. The present condition of the silk market, however, offers the possibility of severe competition between artificial silk and the lower grades of natural silk as the supply of the latter is in excess of immediate needs.

"In view of the greatly increased capacity of American producing plants, and of the apparent policy of foreign producers to affiliate with producers in the United States rather than to obtain a market here for foreign products, it is probable that American manufacturers of artificial silk goods will in the future be practically independent of foreign supplies, and it is even possible that yarn may be exported in important quantities. The variety of sizes and kinds of artificial silk which can now be produced in the United States leaves little to be feared from foreign competition, and the export trade in hosiery and other manufactures has a promising future.'

Tests for Fastness of Dyes

Devised for Use of the Textile Trade by a German Commission.

In order to make uniform the requirements and norms of the German textile industry regarding fastness of colours under all possible conditions of the everyday life, a so-called "Echtheitskommission" was appointed some time ago in order to devise tests by which grades of fastness of textile dyes can be judged.

The recommendations which embody these tests are, as far as known, the most complete series of tests for fastness of dyes against washing, scouring, ironing, rubbing, prespiration, laundering, sun, salt water, etc., for cotton wool and silk. While under present conditions these norms for judging fastness may not be observed in all respects throughout Germany, the official character of the committee, a swell as the thoroughness of its study of the field, will make these norms of undoubted authority in the textile field.

Because of their thoroughness, inasmuch as they cover every conceivable circumstance under which coloured textiles may be exposed to some colour-fading influence, these German norms are given below.

Dyes Experimented With.

In order to make laboratory experimental conditions as near as possible similar to that found in the textile trade, this German commission had taken under experimentation a number of such dyes as were found to be used in most instances by the manufacturers of textiles.

In judging fastness of cotton goods, the following (German) dyes were experimented with: 15% Chicago Blue 6 B; 1% Methyl Blue B G; 1% Indoin Blue R; 20% Kriogen Violet 3 R; 2½% Benzo Pale Red S B L; 9% Hydron Blue; 8% Kriogen Black; 25% Indanthrene Blue.

For wool and silk the following dyes were experimented with regarding their fastness: 3.15% Indigotin I; 3% Patent Blue A; 3.25% Amaranth ; 4.4% Azo Acid Red B; 5% Acid Violet 4 R N; 2.5% Diamin Fast Red F (after-chromed); 4% Anthrachinon Green G X N; pure indigo in grades of strength from 1 to 7.

I.—Washing and Boiling Test for Fastness of Coloured Cottons.

For testing the fastness of dyes in coloured cotton fabrics, the latter was braided with equal amount of boiled-out (unfinished) white cotton fabric of equal count and immersed in water with a volume 50 times that of the braided cotton.

One test for washing consisted in adding 2 grms. of Marseilles soap to each litre of water, in which solution the braided cotton was bathed at 40° C. for 30mins.; after this the cotton was taken out and squeezed out in the hand and thrown back in the bath, this being repeated 10 times in succession; the cotton was then rinsed in pure cold water and dried.

The following two grades of fading were established as norms to the above washing test:—

1. Dyed cotton slightly faded, white cotton coloured;

2. Dye of coloured cotton fast, white cotton unaffected or only very slightly coloured.

The other boiling test for coloured cotton (with white cotton) consisted in adding 5grms. of Marseilles soap as well as 3 grms. of carbonate of soda to each litre of the above-mentioned water-bath, in which the braided cotton was boiled for half an hour; the bath was then cooled down to 40° C., and the cotton left immersed in it for another half hour, after which it was squeezed 10 times as above.

For this boiling test the following two grades of fastness were established as norms:—

1. Dyed cotton fades considerably, white cotton only slightly coloured.

2. Coloured or dyed cotton remains unchanged, white cotton only slightly coloured.

II.—Washing Tests for Fastness of Coloured Wools.

Even weight of dyed wool fabric is braided with washed white wool, and another quantity of coloured wool with unfinished white cotton, and immersed in water having a volume of 50 times that of the fabric, to which for every litre is added 10grms. of Marseilles soap free of any traces of any caustic soda, and ½grm. of carbonate of soda.

One test was by macerating this wool-cotton combination for 15mins. at 40° C. in the above-mentioned bath; after this the braided wool-cotton is squeezed out five times with the hand, being immersed after each squeezing; the fabric is finally rinsed in pure water and dried.

The following forms of fading were established for this test:—

A. Coloured wool against white wool:

1. Colour of dyed wool strongly fugitive, white wool strongly coloured;

2. Colour of dyed wool remains fast or faded only in spots; while wool remains unaffected.

B. Coloured wool against white cotton:

1. Colour of dyed wool fades, and strongly bleeding on white cotton;

2. Colour of dyed wool remains fast, no bleeding on white cotton.

The second washing test for the fastness of dyed wool combined with white wool or white cotton takes the same bath as described above, in which the fabric is treated for 15mins. at 80° C., after which the fabric is left to cool for 15mins., and squeezed out five times as above.

The norms of fading for this test are:—

A. Coloured wool against white wool:—

1. Colour of dyed wool is not fugitive, or only in spots, and is not bleeding on white wool.

B. Coloured wool against white cotton:

1. Colour of dyed wool fast, no bleeding on white cotton.

III.—Rinsing Tests in Cold Water for Coloured Cotton and Wool.

The dyed cotton is braided with half its weight of white wool and white silk and immersed in water having a bulk 40 times that of the fabrics for one hour at 20° C.; the braid is then squeezed out and dried at the prevailing temperature.

Norms of fastness for the above rinsing test of cotton with wool:

1. With single rinsing as described above, colour of

dyed cotton somewhate faded, bleeding over white wool and silk;

2. With single rinsing colour of dyed cotton does not show any fading, and white wool and silk remain unaffected;

3. After rinsing (as described above) three times in changed water no change in colour of dyed cotton or white wool and silk is observed.

For another rinsing test dyed wool is braided with half its weight of washed white wool fabric and immersed in water 40 times the bulk of the braid for 12 hours at 20°C., then squeezed and dried in the open air.

Norms of fastness for this rinsing test of coloured wool with white wool:

1. With single rinsing the colour of dyed wool faded and bled over the white wool;

2. With single rinsing dyed wool and white wool show no change;

3. After rinsing (as described above) three times in changed water, the colour of dyed wool is not faded, and white wool is not affected, or only coloured in spots.

The fastness of the dye in rubbing test was established by stretching an unfinished bleached cotton fabric on the index finger and rubbing it hard against the dyed fabric 10 times, the rubbing length being 4in. each time."—"Daily Trade Record."

(To be continued).

Action of Dilute Sulphuric Acid on Cotton Cellulose

An Improved Method of Testing for Oxycellulose.

EDMUND KNECHT and F. P. THOMPSON.

The affinity for Methylene Blue of cotton which has been tendered by dilute sulphuric acid appears to have been first observed by Girard ("Comptes rendus" 81, 1105, 1875), and was later studied more comprehensively by Camille Koechlin (this "Journal" 1888, p. 163). He showed that the maximum effect of sulphuric acid of 93° Tw. in imparting to cellulose an affinity for Methylene Blue was obtained after six hours' treatment at 15° C. More recently W. Harrison (this "Journal," 1912, pp. 238 and 359) has further contributed to our knowledge of the subject and has shown that the product resembles oxycellulose not only by its increased affinity for Methylene Blue, but also by its decreased affinity for direct cotton colours.. He mentions incidentally that cotton tendered either by dilute sulphuric or hydrochloric acid reacts with phenylhydrazine and that the products consequently resemble oxycellulose also in this respect. The fact that cotton tendered by hydrochloric acid does not show any increased affinity (the affinity in fact is decreased) for Methylene Blue is also alluded to in Harrison's first paper. This difference in behaviour is explained by the assumption that the colloidal form of hydrocellulose produced by sulphuric acid is different from that produced by hydrochloric acid.

Soon after Chardonnet silk had come into the market an attempt was made by one of the authors to explain the affinity of this fibre for the basic colours. A qualitative examination of this fibre revealed the presence of sulphur and a quantitative determination showed that this was present to the extent of between 1 and 2 per cent. (calculated at H_2SO_4). This sulphur could not be extracted by carbon bisulphide. It was considered at the time that the sulphur had come from the ammonium sulphide used in denitrating, and that it might possibly be present as a thio-cellulose, and this might, by analogy with oxycellulose, account for the affinity of the fibre for basic colours In view of our new results it would now appear that this view was probably erroneous.

The present work was undertaken as part of a more comprehensive investigation on the products of limited oxidation of cellulose, mainly with a view to throw further light on the cause of the similarity which exists in the reactions of oxidised cellulose (oxycellulose) and cellulose tendered by sulphuric acid. As far as possible the conditions of concentration, time, and temperature, as well as the copper numbers, Methylene Blue absorption and tensile strengths of the oxidised and partially hydrolysed yarns and fabrics, have been recorded. It was found that whereas the affinity of cotton tendered by sulphuric acid was increased for Methylene blue and decreased for a direct cotton blue, it did not always react with phenylhydrazine or para-nitrophenylhydrazine. This reaction, in fact, was scarcely noticeable unless the action of the acid became so drastic as to cause more or less complete dismemberment of the fibre. In the case of hydrochloric acid, it was scarcely noticeable under any conditions. The observations made by Harrison to the effect that even after treatment with caustic alkali the sulphuric acid-tendered cotton retained it affinity for Methylene Blue was confirmed. Further investigation of the product led, however, to the remarkable observation that after washing with water and then subjecting to prolonged boiling with normal caustic soda it contained sulphur. Quantitative determination showed that this amounted to about one per cent. (expressed as H_2SO_4). This result coincides with the presence of about a similar amount of sulphur in Chardonnet silk and with the difficulty experienced in removing all the sulphuric acid in "stabilising" gun-cotton. It probably also accounts for the fact that whereas nitro-cellulose made with mixed acids gives on denitrating a product which dyes with basic colours, nitro-cellulose made by nitric acid alone and subsequently denitrated has no affinity for these dyestuffs (Knecht and Lipschitz, *J.S.C.I.*, 1914, p. 116). Although there is at present no evidence to show in what form this sulphur is contained in the cotton fibre, it seems now fairly evident that its presence in the cause of increased affinity for basic and decreased affinity for direct colours. These properties persist even after boiling with caustic soda, as does also the property of the treated fibre of yielding a more or

and the sulphate present estimated by precipitation as

Another sample of sulphuric acid-tendered cotton tion took place slowly but completely. The residue, when quite white, was taken up with water, nitrates removed by evaporating down with hydrochloric acid, was boiled in water for an hour and in N/2 caustic soda for an hour. This was then thoroughly washed by boiling with water. Sulphur was still present in the residual fibre. Even when the alkali treatment was extended to a boil of four hours and the mass allowed to stand overnight in the alkaline liquor, there was still sulphur present.

Estimation of Fixed Sulphur.—5 grms. of calico, wetted with its own weight of 2N sulphuric acid was dried at 40°-45° C. for two hours. It was then boiled for half an hour in distilled water, and for half an hour in 500 cc. of N/10 caustic soda, being thoroughly washed again by boiling in water for an hour. The mass was dried and the sulphur estimated. To this end the dried product was dissolved in nitric acid (sp. g. 1.5), and the solution after dilution neutralized by addition of caustic soda solution. This was evaporated to dryness in a silver dish and the temperature raised until combushave taken place and the product cannot be an oxidised barium sulphate.

The sulphur present expressed as sulphuric acid amounted in one case to 1.14 and in another to 0.97 per per cent. on the weight of the original cellulose.
cellulose.

The action takes place when dilute sulphuric acid is dried into cotton is of a two-fold character. The cellulose is partially hydrolysed, which results in a reduction of the strength of the fibre, and there is also a fixation of some of the acid which behaves as a mordant for basic colours. By drying 1-10 per cent. solutions of sulphuric acid into cotton, both these actions take place, the product being tendered and possessing a very great affinity for Methylene Blue, Rhodamine B, Crystal Violet, etc., even after prolonged washing with water and alkali. It has very little affinity for direct colours, notably Diamine Sky Blue. It was indicated by Harrison that the increased affinity for Methylene Blue did not depend on the degree of tendering. It has now been found possible to separate these two actions. Thus, if cotton is boiled with sulphuric acid of ½ per cent. strength for an hour, its strength is impaired but its affinity for Methylene Blue is not increased but slightly diminished. No sulphuric acid is fixed. Cotton which has become tendered without having its affinity for basic colours increased may therefore be produced by hydrochloric acid or by prolonged exposure to hot weak sulphuric acid, which is not allowed to concentrate. Tendering by oxidation or by allowing weak sulphuric acid to dry into cotton results in an increase in affinity for Methylene Blue. Moreover, it has been found that cotton modified by drying-in sulphuric acid has a marked affinity also for the leuco-compounds of Methylene Blue, Crystal Violet, etc., whereas in the case of oxidised cellulose this affinity is only just perceptible. The behavious of the two products towards direct cotton colours (Diamine Sky Blue is very suitable) after treatment with caustic alkali serves to distinguish between them. Both oxidised and sulphuric acid-treated cotton resist the dyeing with Diamine Sky Blue, but if boiled for half an hour with 5 per cent caustic soda, the affinity in the case of oxidised cellulose is restored, whereas the slight affinity of the sulphuric acid product is not altered.

less intense orange colouration when warmed in an acetic acid solution of *p*-nitrophenylhydrazine.

Bleached cotton yarn (with a copper number of 0.6) was wetted with about its own weight of sulphuric acid of 1.065 sp. g., and dried at 50° C. for two hours. This treatment had completely destroyed the fibrous structure. The copper number was found to be 5.2.*

By similar treatment, using hydrochloric acid of 1.008 sp. g., a product is obtained having a copper number of 5.1.

For comparison an oxidised yarn was prepared by the permanganate process (this "Journal," 36, 10, p. 251), using sufficent oxidising agent to supply 1, 12 atom of oxygen per cellulose unit, $C_6H_{10}O_5$. For this purpose 10 grms. of cotton yarn were immersed in a solution of 0.33 grm. of potassium permanganate in 10° Tw. sulphuric acid. This was freed from manganese and thoroughly washed. Its copper number was 5.3.

Although the copper numbers of the above products are in fair agreement, the result of the acid treatment is to destroy the fibrous nature completely, whereas the oxidation process resulted in a much less severe action. The product was still fibrous, but its breaking strength was reduced to 28 per cent of its original value.

All the products gave a yellow colour on boiling with N/2 caustic soda, with some loss in weight; the action was, however, much more pronounced in the case of the oxidised yarn.

The treated yarns were then dyed in Methylene Blue and the amounts of dyestuff left behind in solution estimated quantitatively by means of titanous chloride, the amounts taken up by the fibre being arrived at by difference. Untreated cotton was dyed under identical conditions for comparison.

Product examined	Percentage of Methylene Blue fixed.
1.—Bleached cotton	0.338
Sulphuric acid-treated cotton . .	1.004
Oxidised cotton	0.747
2.—Bleached cotton	0.345
Hydrochloric acid-treated cotton	0.282
Oxidised cotton	0.761

These quantitative results illustrate numerically the similarity between oxidised and sulphuric acid-treated cellulose. The product obtained by the action of sulphuric acid on cotton behaves like the uroduct of oxidation also with regard to its dyeing property with direct cotton dyes, in that they both resist these colours to an extent depending upon the degree of modification.

On account of this similarity the following experiment was carried out to determine whether any oxidation takes place by the sulphuric acid treatment.

Calico was spotted with a 5 per cent. solution of sulphuric acid, placed in a flask on a waterbath, and heated in an atmosphere of carbon dioxide until dry. The gases from the flask were passed through a very weak solution of iodine. As no action was observed, this was regarded as an indication that no sulphurous acid was formed, but the product nevertheless possessed the increased affinity for Methylene Blue. Since the action takes place out of contact with atmospheric oxygen, and as no sulphuric acid is reduced, oxidation cannot

*All the copper values given relate to air-dried material.

Summary.

(1) Cotton which has acquired an increased affinity for Methylene Blue and a decreased affinity for Diamine Sky Blue by treatment with dilute sulphuric acid is not oxidised cellulose, but contains fixed sulphur which is not removed by washing with boiling water or alkali.

(2) The characteristic affinity of Chardonnet silk for basic colours is due to the sulphur (or sulphuric acid) fixed during the nitration with mixed acids and not during denitration.

(3) The affinity of oxidised cellulose for leuco-Methylene Blue is very slight, whereas it is very marked in the case of the sulphuric acid product.

(4) Oxidised cellulose and sulphuric acid-treated cellulose may be distinguished by boiling with weak alkali and then dyeing wit ha direct colour (Diamine Sky Blue).—Extracted from the Journal of the Society of Dyers and Colorists.

The Best Drafts in a Cotton Mill

By WM. SHAW, Unionville, Conn.

There are many different versions of the correct drafts at which to operate the different machines in our cotton mills. When constructing and arranging a cotton mill for any specific counts, there is one subject which requires special treatment prior to dealing with the constructive details.

This is the arrangement of the drafts in the various machines. The success of a mill depends on the attention paid to the proper drafting of the machines. It is one of the most vital matters in the operation of a cotton mill. The man that has mastered the art of drafting is worth his weight in gold to any cotton mill. It is too bad that there are no textile schools in Canada.

However, the Canadian mill men are fortunate in having the "Canadian Textile Journal," in which they find the subject of the elimination of troubles in yarn manufacture, in almost every issue.

In writing this article, I have in mind the young Canadian student, and I am giving them the best that there is in me. Study this article. Take it apart and examine it. It will benefit you.

The first operation to discuss is the picking machine. Strictly speaking, there is no draft to a picker, but instead, the number of blows to the inch. Never strike the stock more than forty blows to the inch.

Next, remember this, when you slow down the feed in any picker, you increase the blows to the inch. Many carders have made the costly mistake of reducing the speed of the feed roll, before considering the above point. Nothing will make conditions as deplorable and in so short a time, as beating the cotton too much. The next operation is that of the action of the licker-in upon the cotton being held by the feed roll and resting against the face of the feed plate. Many carders conceive the idea, that the length of the staple determines the setting of the feed plate to the licker-in, while others claim it is the weight of the sheet of lap, and a few view the length of the staple and a heavy sheet of lap as two extremes. Some writers go so far as to claim that the length of the staple determines the length or distance to draw and polish the fibres. We hear a great deal about the combing action of the licker-in, but it is all theory. Make the following test. When reclothing a card, after removing the old clothing, run the card without clothing on the cylinder, and examine the condition of the stock after passing the licker-in, there is a surprise for anyone that will take the trouble to make the test. In every case, the fibres are found crossed in every direction.

The shape of the so-called nose of the feed plate plays a great part in the general action of the cleaning process, which lessens to a large degree the severe treatment of the fibers. I would like every Canadian mill man to remember the following:

A card sliver should not weigh more than 50 grains to the yard, and the more rapidly the work can be gotten from the card consistent with the quality or grade of work required, the stronger the yarn.

There are three types of feed plates (1) the short nose feed plate for short cotton (2) the medium nose feed plate for medium cotton, and (3) the long nose feed plate for the longest stock. Very few mills have a different set of feed plates, so it is up to the carder to arrange this plate so as to obtain the best results.

If we use a short nose feed plate in case of long stock, the fibers are injured, for the reason that no matter if we do have a wider setting say up to a 20-1000 gauge, the fibers are held under the action of the feed roll and the fibers are stripped from their waxy wall which makes the stock fluffy. The best method, is to have the distance between the bite of the feed roll and the bite of the licker-in exceed the length of the staple being run by 1/8 of an inch. If you have only one set of feed plates, raise the plate.

Laps are often fed which are neither so well cleaned or so even in weight as they should be. It cannot be too strongly insisted on that it is absolutely necessary for the success of a card that the lap when presented to it should be in as perfect a condition as it is possible to get, and every impurity which can be expelled by the beating action of the picker should be eliminated.

The only work to be thrown upon the card should be the removal of the short fibers and impurities, which, without breaking the fibers cannot be detached during picking.

It has often been said that when setting the feed plate to the licker-in as close as possible, that the licker-in would have a tendency to destroy a majority of the fibers, but I assure every reader of this Journal that when the distance of the bite of the feed roll and the bite of the licker-in slightly exceeds that of the staple, it is impossible to set the feed plate too close, so long as you do not come in contact with the points of the licker-in.

The construction of the licker-in fillet is, indeed, one of extreme interest.

The licker-in teeth play through the fringe of cotton hanging downwards at a very high velocity, and if they were not scattered over the shell of the licker-in a tooth would strike the fringe of cotton exactly where the previous one struck, thus injuring the fibers.

The spiral construction of the licker-in fillet causes

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the downward hanging fringe to attain a slightly angular position which is desired, for the reason that the bulk of the fibers lodge in the grooves, and the above action causes a dual operation always going on which makes the detachment of the fibers gradual which is also desired. On the other hand, if we have a wide setting at this point, we have a sudden detachment, which means the fibers are taking down in clusters and creates the evil known as flaking.

A calculation which can be made, will show that it is not necessary for the licker-in to feed sufficient cotton to the cylinder to enable the latter to be always taking up fibers. The number of teeth on the licker-in and cylinder and their respective velocities render it practically impossible for each point on the cylinder to take up at each revolution one fiber which is theoretically supposed to do.

The general method of adjustment on a card is to retain a draft of from 90 to 120 inches. The draft is determined by the length of the staple and grade of cotton being used, because on a card, draft is equal to the weight per yard going in, divided by the weight per yard coming out, which fixes the time the fringe of cotton is exposed to the action of the licker-in teeth. At this stage the reader may be tempted to ask what is the best card draft? For the sake of illustration, let us assume that we have a draft of 120 inches on the card. Again, let us assume the card sliver is about 50 grains to the yard, which means a heavy sheet of lap.

In such a case the fibers are exposed to the action of the licker-in teeth, for a period equal to that of the coiler delivering 120 inches of sliver. Therefore, it should be seen, that even if the fibres are not broken by having the proper setting on the feed plate, they are chafed and robbed of their waxy wall. Besides, with such a long draft, what happens when the lap splits? The licker-in will get choked up so bad with the overload that the belt will slip off the licker-in pulley. On the other hand, with a short draft and a fast running sheet of lap, gives the licker-in a better chance to act on the sheet of cotton because of the fact that it is lighter, and although there are as many fibers presented to the licker-in teeth, it must be borne in mind, that the fast running feed roll destroys the pull and friction that exists in case of a long draft, see the point?

Therefore, if the lap is in a poor condition and dirty to begin with, a long draft is best, but the result will be clean weak yarn. Again, if the stock is knitty and long, a long draft is best, and again you have the production of a weak yarn.

On the other hand if the lap from the finisher picker is in the condition it should be, why by all means have a short draft, which means the production of a clean strong yarn.

In all my experience, I found a draft of 95 inches the best, for the reason, that our picking machinery at present, takes more foreign matter from the stock.

When a picker room is equipped with bale breakers, automatic conveyors and inclosed cleaning trunks, the above draft is best.

However it must be stated here, that it is impossible to make strong clean yarn from dirty stock, it is the law of compensation, if you expose the fibers to the action of the wire teeth for too long a period the stock suffers if this period of time is reduced, you get a stronger yarn, but an unclean yarn.

What is the best draft on the drawing frames? Before answering this question, let us look back to the time of the very old type of drawing. We had at that time 3 into 1 at each delivery. Later, these were increased to four, and now the most common doublings of slivers on almost all drawing is six. But why stop at six? Why was the doubling doubled? To destroy the irregularities found in the card sliver A card sliver will vary from one to six grams, in some cases more. This was found to be an immense hindrance to the production of an even yarn, so the doublings were increased by the builders to six.

Many mills have increased their doublings on their drawing up to ten. This is accomplished by boring the guide plate for the reception of the extra slivers. The card sliver is reduced correspondingly, and so the drawing draft remain the same. In such a case, it is of course necessary to have an abundant amount of carding.

Otherwise the draft must be increased correspondingly. The drawing frame is where we should do the most drawing, and at the same time double at every opportunity. For the above reason, drawings are heavily weighted so as to make bite between the rolls stronger than any stock. You get no hard ends on drawing frames.

A light finished drawing sliver spells success to any cotton mill.

A draft of six is the most common draft found on drawing frames, and in most cases found to be the best. However, it is much better to have a longer draft on the drawings than to have an excessive draft on any of the proceeding processes.

(To be continued.)

COTTON PRICES.

No Immediate Prospect of Fall in Price of Cotton Products.

Despite the fact that nearly every other commodity has suffered a decrease in price, cotton still remains on the up-grade, says the Montreal Star.

According to several firms in Montreal, there is no immediate prospect of a fall in the price of cotton products. The market is firm and is liable to remain so. About the end of August the market price of raw cotton jumped from eleven cents per pound to somewhere around twenty, an approximate increase of about 60 per cent. Subsequently cotton goods increased in price about 10 per cent.

If there is any change at all, it is stated, it is more likely to be an increase in price, the raw cotton having advanced 60 per cent and the cotton product only about 10 per cent.

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Lime in Cotton Bleaching

Thorough Discussion of Both Advantages and Disadvantages of Lime as Compared with Caustic Soda.

By OSCAR R. FLYNN.
Chemist, Waldrich Bleachery, Delawanna, N.J.,
in "Rock Products."

This article is a short discussion of the bleaching of cotton with especial reference to the relative merits of caustic lime and caustic soda as bleaching materials. The question is almost an international one, as in this country the use of lime has been practically abandoned, while in England, especially in the Lancashire district, its use is still quite general.

By caustic lime, or, more briefly, lime, we are to understand calcium hydroxide, made by the combination of water with quick lime chemically known as calcium oxide. By caustic soda, we mean sodium hydroxide. Both of these substances are classed chemically as alkalies which may be defined as soluble bases.

To properly understand the use of caustic lime or caustic soda in bleaching, we must consider briefly the nature of cotton and the conditions of cotton fabrics as they come to the bleacher.

Cotton in whatever form it may be found when unmodified by chemical action is a mass of fibres, each fibre being essentially a tube of cellulose which was originally attached to a cotton seed where it served as an organ of transportation for the seed, just as thistledown serves for the transportation of the seed of the thistle.

Like all external plant organs such as leaves and the skins of fruits, the cotton fibre is coated with wax to protect it from moisture. Within the cellulose tube which constitutes the cotton fibre, we find a variety of non-cellulose substances, the remains of living protoplasm which once filled the tube. To these we may add fragments of the cotton seed and capsule, which contains much tannin. All of these non-cellulose substances may be described as the natural impurities of cotton. In addition to the natural impurities, we find in unbleached cotton cloth various adhering substances such as starch and grease used as dressing for the yarns of weaving, as well as dirt and mineral oil coming from the contact with machinery, in handling and in transportation. These we may describe as artificial impurities.

The purpose of bleaching is the removal of the natural and artificial impurities of cotton so as to leave the cellulose in a pure and unmodified condition.

As cellulose itself is white, the word "bleaching" used in describing the whole process is sufficiently justified, although this condition of whiteness is far from being the only desirable result of bleaching.

Necessity for Bleaching.

If these various impurities were not removed, it would be impossible to properly dye a print-cotton fabric by many of the processes now in use, chiefly on account of the cotton wax which prevents the solution used in dyeing and printing from penetrating the fibre. It is possible by the use of chlorine preparations to whiten cotton without removing the various natural and artificial impurities, but cotton so prepared will not remain white but will change when subjected to high temperatures or in storing just as cheap paper changes and gets brown.

There is only one practical method of purifying cotton cellulose; that is by treatment with alkalies. The underlying chemical principle involved in cotton bleaching may be enumerated as follows: Alkalies introduced into a mixture have a tendency to modify chemical action so that acid substances result with which they naturally combine to form salts. This action is especially apparent when solutions of strong alkalies act upon these compounds of carbon which are of animal and vegetable origin.

acids the free admission of air is favorable to this sort acids the free admission of aid is favorable to this sort of action. Where air is not admitted the acid substances are formed by a rearrangement of the substances themselves in which rearrangement the water present usually takes part.

Cellulose, in the absence of air, is not affected by dilute solutions of alkalies at temperatures which do not greatly exceed the boiling point of water. If the strength of the alkali and temperatures are sufficiently increased, either one or both, the cellulose is affected, giving rise to a modified cellulose with increased affinity for alkali, known as "cellulose hydrate." The change goes under the name of "mercerization," and is brought about intentionally by treating cotton with very concentrated alkalies at low temperatures. Cellulose hydrate, that is mercerized cotton, differs in its affinity for dyes from ordinary cellulose, so that cotton which contains mercerized areas will not dye evenly.

In the presence of air a still more acid modification of cellulose is produced, known as "oxy-cellulose," which not only has different dyeing properties from ordinary cellulose, but lacks its toughness and resistance to relatively high temperatures. The presence of areas of oxy-cellulose in cotton goods is manifested by darkening during steaming and drying, and by unequal absorption of dyes. The change is not merely superficial rupture of the fabric, but is also a consequence of the formation of oxy-cellulose.

The non-cellulose organic substances found in unbleached cotton fabrics are readily acted upon by solutions of alkalies at temperatures and concentrations which leave the cellulose unchanged.

The whole care of the bleacher is to so conduct the alkali treatment that the impurities will be completely acted upon, while the cellulose at the same time escapes modifying action. To this end, the unbleached cotton is packed in steel boilers known as "kiers," together with the requisite quantity of alkali and water.

After the air is displaced by steam, the kier is sealed by special valves and a tightly-fitting cover, from all external communication. The temperature is then raised by live steam or closed coils to the proper degree and there maintained. Meanwhile the alkaline

solution is kept in circulation by means of pumps, injectors or by other devices.

While the hydroxides of any of the alkalies or alkaline earth metals might be used in the bleaching of cotton the matter of cost limits the bleacher to two, viz.; sodium hydroxide or calcium hydroxide, i. e., caustic soda and caustic lime.

Sodium Hydroxide vs. Calcium Hydroxide.

The first point to be considered in a discussion of the relative merits of these two alkalies is that sodium hydroxide is a very soluble substance and forms very soluble salts with nearly all substances of an acid character and in particular with those acid substances which it generates in contact with the impurities of unbleached cotton.

Calcium hydroxide or caustic lime on the other hand is only slightly soluble and forms insoluble salts with many acids, especially with those which result from its modifying action on the cotton impurities. It is on this difference in solubility of the two alkalies and their resulting compounds that the arguments for and against their respective use must chiefly hinge.

In bleaching with caustic soda all of the alkali introduced into the kier will be present in solution. At the beginning of the digestion it will be present in maximum concentration, and there is danger of the formation of cellulose hydrate, especially where the cotton saturated with alkali lies in contact with a more highly heated surface. If in the effort to avoid mercerizing effects, the quantity of caustic soda is reduced, there may be insufficient present to react completely with the cotton impurities, with the result that the goods will not be properly absorbent and not able to withstand steaming and storing. In order to escape this dilemma many bleachers give the cotton two kier boils. Special devices are also used to prevent local overheating so as to avoid the production of these so-called mercerized stains.

In the lime bleach, the alkali is introduced into the kier in the form of milk of lime which is finely divided calcium hydroxide suspended in a saturated solution of calcium hydroxide. Such a mixture remains of uniform strength until the suspended lime is used up. The mechanism of its operation is as follows: The lime in solution acts on the cotton impurities and enters into combination with the resulting acids. This has a tendency to weaken the solution, but this tendency is continually opposed by more of the suspended lime dissolving. The alkaline strength of a saturated solution of slaked lime under any circumstances is not nearly great enough to cause mercerizing effects, and there need be no deficiency of alkali to complete the bleaching effect as an ample reserve is provided for by the undissolved lime in suspension. Hence by the use of lime the dilemma encountered with the use of caustic soda is avoided.

Owing to the solubility of organic sodium salts, the products of the bleaching action of caustic soda pass at once in solution. For their removal as well as the removal of any excess of alkali all that is required is a thorough rinsing in pure water.

On the other hand, the calcium salts formed during the lime bleach remain adhering to the cotton fibre and are not removed by subsequent washing. For their complete removal and the removal of the excess of caustic lime further treatment is needed.

A treatment with dilute hydrochloric acid, known as scouring, transposes all the free and combined lime

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into soluble calcium chloride readily removed by rinsing, but leaves much of the organic impurity adhering to the cotton as insoluble organic acids. To remove these together with dirt and mineral oil the cotton is returned to the kier, where it is digested with rosin soap and then with a solution of soda ash. The latter converts organic acids into soluble sodium salts removable by washing with water. The former is an emulsifying and cleansing agent and acts on substances such as mineral oil and dirt, which do not go into solution as alkali salts.

In the caustic soda bleaching it is possible to mix soaps and other emulsifying agents with the caustic soda, so that this emulsifying and cleansing action may go on at the same time that the caustic soda is acting upon and solubilizing the other impurities. None of these agents may be added to the contents of the kier during the lime boil, as the lime destroys them, forming additional insoluble lime salts to be added to those which result from the action of the lime on the cotton impurities. Therefore, no emulsifying and cleansing effect would take place.

Owing to the tendency of oxy-cellulose to form in the presence of air and alkali, the prompt removal of all surplus alkali is required as soon as the cotton is withdrawn from the kier. This, as we have seen, presents no special difficulty in the case of caustic soda. Sometimes through the use of improperly slaked lime, or lime which is incapable of proper slaking, particles of lime of sensible size remain entangled in the goods, even after the hydrochloric acid treatment and rinsing. These particles in conjunction with the air cause the formation of oxy-cellulose and eventually of holes in the fabric.

The action of alkali in the absence of air with subsequent removal of the products of this action is the important part of cotton bleaching, and when properly performed leaves practically pure unmodified cellulose which may be dyed and printed in a satisfactory manner, and will not damage under steaming or storing. There, nevertheless, remains slight traces of some non-cellulose substances which prevent this product from being absolutely snow white. Where this absolute whitening is required a treatment with some oxidizing agent such as sodium of calcium hypochlorites is required followed by washing. This operation is independent of the kind of alkali treatment originally used, and so does not enter into the question of the relative merit of lime and soda in cotton bleaching.

In conclusion, it may be stated that fine lime, owing to its low degree of solubility, is well adapted to the bleaching of cotton without danger of mercerizing or incomplete action, but owing to the insolubility of the resulting calcium compounds, additional treatments are required for the final removal of the impurities. The effect of these additional treatments being to offset this advantage of the cheapness of lime over caustic soda.

Caustic soda is adapted to a simpler process of bleaching, but owing to its solubility and the necessity of using it entirely in solution, the production of mercerized stains or the failure to completely remove impurities are complications liable to result from its use.

The general tendency of bleachers is, and has been, to abandon the lime bleach for the caustic soda. It is quite possible, however, that the lime bleach might be improved by simplification, for example, by combining the soap and soda ash treatments, using some free rinsing soap instead of the usual rosin soap.

BALLAD OF THE BOLD BAD BOLL WEEVIL.

Come, listen, lordlynges, unto me,
A tale I have for to tell,
Of a fight that was fought in the U.S.A.,
A battle that lasted many a day,
And many a night as well.
From the nutty groves of far Brazil
This dreadful monster came,
With fourteen eyes in the back of his head,
A mouth like a tunnel painted red—
Boll Weevil was his name.
At the sound of his voice the mountains split
(Or else they've told me wrong),
For nothing on earth he cared a dern,
He measured a mile from stem to stern,
And his rudder was twice as long!
This horrible person roamed abroad
(His manners, they say, were rotten),
And every morning for his lunch
He'd stroll down South, and slowly munch
5,000 bales of cotton.
Bale after bale he put away,
Nor ever seemed to tire,
And when he'd eaten half the crop
The price of cotton shares did drop,
The price of shirts went higher.
But "Suffering Mike!" the people cried,
"We'll slay this bold bad Weevil,
For Gee! we've got it in ye neck,
This guy is far too fresh, by Heck!
His appetite is evil."
So round about his path they strewed,
In spots where he could well see 'em,
Five hundred juicy bales, all doped
With deadly poison (so they hoped),
Viz.: Arsenate of Calcium.
Came in his solar plexius.
He laid him down to rest him then
(His head was up near Nashville, Tenn.,
His tail, they say, in Texas).
"Hurrah!" the people cried, "and now
We hope the brute will quit us."
But Weevil, when the pain had gone,
Said, "Gosh! I rather liked that one!
My appetite's as sharp as fun,
I think I'll order half a ton,
It beats your gin-and-bitters."—F. W. Thomas in the "Daily News."

BOBBIN MANUFACTURER DEAD.

C. C. Thompson of Thompson Co., Ltd., Dies at Sherbrooke.

Mr C. C. Thompson who founded, thirty-nine years ago, the business of Thompson Co., Ltd., manufacturers of textile spools and bobbins at Sherbrooke Que., died on Nov. 13th after an illness of nearly two years. Mr. J. A. Cook who has managed tthe business for the last year and a half will continue in charge and there will be no change in the policy of this company.

INDEX TO MILL SUPPLIES

Acid-Resisting Paint:
McArthur, Irwin, Limited
Dominion Paint Works Ltd.
Canadian Johns-Manville Co., Ltd.
Albone:
The Roessler & Hasslacher Co.
Aniline Oil:
British Dyestuff Corporation Huddersfield Ltd.
A Klipstein & Co., Ltd
McArthur, Irwin, Limited
Aniline Dyes:
Atteaux Dyestuffs & Chemicals Co., Limited
British Dyestuff Corporation Huddersfield Ltd.
L. B. Holliday & Co., Ltd.
A. Klipstein & Co.
Geigy Company, Inc.
Pollack Brothers & Co
McArthur, Irwin, Limited
Sharpe C. A. Ltd.
T. D. Wardlaw & Son
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Leigh & Butler.
Saco-Lowell Shops.
Sargent's C. G. Sons Corp.
Automobile Gears:
Diamond State Fibre Co., Canada, Ltd.
Bagging Machines:
Sargent's C. G. Sons Corp.
Baling Presses:
Bredannax, Louis & Son.
Barrels:
Diamond State Fibre Company.
Baskets:
Diamond State Fibre Company.
Beamers:
Crompton & Knowles, Loom Works
Saco-Lowell Shops.
Belting:
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Belt Dressing:
McLaren, The J. C., Belting Co., Ltd.
Bleaching Powder:
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McArthur, Irwin, Limited
Can. Salt Co., Windsor, Ont.
Nichols Chemical Company
Bleaching Materials:
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McArthur, Irwin, Limited.
The Roessler & Hasslacher Co.
Nichols Chemical Co., Limited.
Sharpe C. A. Ltd.
Boards:
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Jefferson, Edward.
Leigh & Butler.
Watson, L. S., Mfg., Co.
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Burr Pickers:
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Cans:
Diamond State Fibre Company.
Canvas Waterproofing Paint:
Dominion Paint Works, Ltd.
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East Jersey Pipe Corporation.
Jefferson, Edward.
Sargent's, C. G., & Sons.
Tolhurst Machine Works.
Card Clothing:
Bredannax, Louis & Sons.
Crabb, Wm. & Co.
Leigh & Butler.
T. D. Wardlaw & Son
Watson, L. S. & Co.
Card Grinding Machinery:
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Carpet Machinery:
Crompton & Knowles Loom Works
Saco-Lowell Shops.
Caustic Soda:
Canadian Salt, Co.
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McArthur, Irwin, Limited
Nichols Chemical Company
Centrifugal Dryers:
Imperial Trading Co.
Watson, Laidlaw Co.
Tolhurst Machine Works.
Chemicals:
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McArthur, Irwin, Limited
Nichols Chemical Company
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Canadian Salt Co.
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McArthur, Irwin, Limited.
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Philadelphia Textile Machinery Co
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Sharpe C. A. Ltd.
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McArthur, Irwin, Limited
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East Jersey Pipe Corporation.
Draper Corporation.
Foster Machine Co.
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Klauder Weldon Dyeing Mach. Co.
Lamb, J. E., Textile Machinery Co.
Leigh & Butler.
Roy, B. S. & Son, Company.
Saco-Lowell Shops.
Stafford Co., The
Tolhurst Machine Works.
Wildman Mfg. Co.
Whitehead, Emmans, Limited.
Cotton Openers and Lappers:
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Crompton & Knowles Loom Works
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Wedsted, Laidlaw Co.
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Duck Machines, Cotton:
Gessner, David.
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Hussong Dyeing Machine Co.
Jefferson, Edward.
Klauder-Weldon Dyeing Machine Co
Klipstein, A. & Co.
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Roy, B. S. & Son, Company.
Tolhurst Machine Works.
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Klauder-Weldon Dyeing Machine
Dyestuffs and Chemicals:
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British Dyestuff Corporation Huddersfield Ltd.
Benson, W. T., Co.
Dow Chemical Co.
Geigy Co., Inc.
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Extracters:
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Watson, Laidlaw Co.
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Fibre Cans:
Jefferson, Edward.
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Dominion Paint Works Ltd.

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Tolhurst Machine Works
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Stephenson, Harry

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Scouring:
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Klauder-Weldon Dyeing Machine Co

Scutching Machine:
Gessner, David

Second Hand Machinery:
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Separators (Yarn):
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Saco-Lowell Shops.
Stephenson, Harry

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Saco-Lowell Shops.

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Saco-Lowell Shops.
Stephenson, Harry

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Spindler, E. O.

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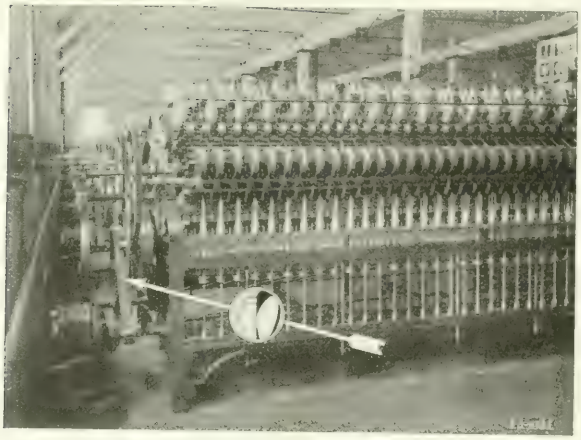

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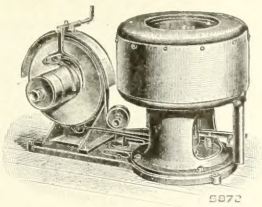

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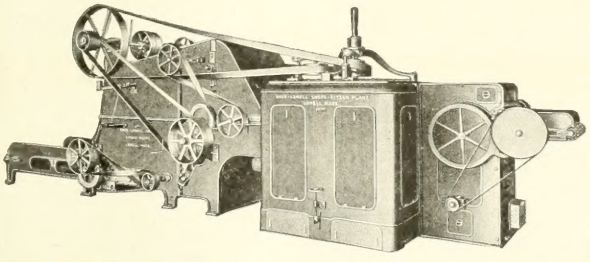

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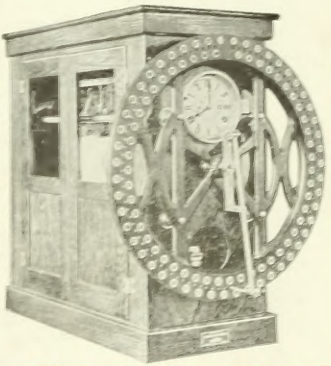

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